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MEDICAL NEWS.

EDITED BY

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Fellow of American Academy of Medicine, *Etc.*

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ORIGINAL CONTRIBUTIONS.

International Medical Congress, 1881.

OPENING ADDRESS BY THE PRESIDENT, SIR JAMES PAGET, BART.*

IT is not necessary to defend the meeting of an International Congress. Such meetings have become one of the general customs of our time, and have thus given evidence that they are generally approved. Let me rather suggest to you some thoughts as to the work which, being in Congress, we have to do, and the spirit in which it may best be done, so that the good effects of our meeting may last long after our parting.

In the largest view of our design, it may seem to be that of bringing together a multitude of various minds for the promotion and diffusion of knowledge in the whole science and art of medicine, in their widest range, in all their narrowest divisions, in all their manifold utilities. And this design, I can not doubt, will be fulfilled; for, although the programme tells of selected subjects for discussion, and defines the order of our work, yet knowledge will be promoted in a much wider range in the meetings without order, which will be held every day and everywhere—meetings of men with all kinds of mental power, and all forms of knowledge and of skill; every one ready alike to impart and to acquire knowledge.

It is safe to say that in the casual conversations of this coming week there will be a larger interchange and diffusion of information than in any equal time and space in the whole past history of medicine. And with this inter-

*Delivered August 3, 1881.

change will be a larger increase, for in the mart of knowledge he that receives gains, and he that gives retains, and none suffer loss.

The increase will be the greater, because of the great variety of minds which will meet. As I look round this hall, my admiration is moved not only by the number and total power of the minds which are here, but by their diversity; a diversity in which I believe they fairly represent the whole of those who are engaged in the cultivation of our science. For here are minds representing the distinctive characters of all the most gifted and most educated nations; characters still distinctly national, in spite of the constantly increasing intercourse of the nations. And from many of these nations we have both elder and younger men; thoughtful men and practical; men of fact and men of imagination; some confident, some skeptic; various, also, in education, in purpose and mode of study, in disposition and in power. And scarcely less various are the places and all the circumstances in which those who are here have collected and have been using their knowledge. For I think that our calling is pre-eminent in its range of opportunities for scientific study. It is not only that the pure science of human life may match with the largest of the natural sciences in the complexity of its subject-matter; not only that the living human body is, in both its material and its indwelling forces, the most complex thing yet known; but that in our practical duties this most complex thing is presented to us in an almost infinite multiformity. For in practice we are occupied, not with a type and pattern of the human nature, but with all its varieties in all classes of men, of every age and every occupation, in all climates and all social states; we have to study men singly and in multitudes, in poverty and in wealth, in wise and unwise living, in health and all the varieties of disease; and we have to learn, or at least to try to learn, the results of all these conditions of life while, in successive generations and in the mingling of families, they are heaped together, confused, and always changing. In every one of all these conditions man, in mind and body, must be studied by us; and every one of them offers some different problems for inquiry and solution. Wherever our duty, or our scientific curiosity, or, in happy combination, both, may lead us, there are the materials and there the opportunities for separate original research.

Now, from these various opportunities of study, men are here in Congress. Surely, whatever a multitude and diversity of minds can, in a few days, do for the promotion of knowledge, may be done here. Every one has something he may teach, much more that he may learn; and, in the midst of an apparent utter confusion, knowledge will increase and multiply. It has been said, indeed, that truth is more likely to emerge from error than from confusion, and, in some instances, this is true; but much of what we call confusion is only the order of nature not yet discerned; and so it may be here. Certainly, it is from what seems like the confusion of successive meetings such as this that that kind of truth emerges which is among the best moving and directing forces in the scientific as well as in the social life—the truth which is told in the steady growth of general opinion.

But it is not proposed to leave the work of the Congress to what would seem like chances and disorder, good as the result might be; nor yet to the personal influences by which we may all be made fitter for work, though these may be very potent. In the stir and controversy of meetings, such as we shall have, there can not fail to be useful emulation; by the examples that will appear of success in research, many will be moved to more enthusiasm, many to more keen study of the truth; our range of work will be made wider, and we shall gain that greater interest in each other's views, and that clearer apprehension of them, which are always attained by personal acquaintance and by memories of association in pleasure as well as in work. But as it will not be left to chance, so neither will sentiment have to fulfill the chief duties of the Congress.

Following the good example of our predecessors, certain subjects have been selected which will be chiefly, though not exclusively, discussed, and the discussions are to be in the sections into which we shall soon divide.

Of these subjects it would not be for me to speak even if I were competent to do so; unless I may say that they are so numerous and complete that—together with the opening addresses of the Presidents of Sections—they leave me nothing but such generalities as may seem commonplace. They have been selected, after the custom of former meetings, from the most stirring and practical questions of the day; they are those which most occupy men's

minds, and on which there is at this time most reason to expect progress, or even a just decision, from very wide discussion. They will be discussed by those most learned in them, and in many instances by those who have spent months or years in studying them, and who now offer their work for criticism and judgment.

I will only observe that the subjects selected in every section involve questions in the solution of which all the varieties of mind and knowledge of which I have spoken may find their use. For there are questions not only on many subjects, but in all stages of progress toward settlement. In some the chief need seems to be the collection of facts well observed by many persons. I say by many, not only because many facts are wanted, but because in all difficult research it is well that each apparent fact should be observed by many; for things are not what they appear to each one's mind. In that which each man believes that he observes, there is something of himself; and for certainty, even on matters of fact, we often need the agreement of many minds, that the personal element of each may be counteracted. And much more is this necessary in the consideration of the many questions which are to be decided by discussing the several values of admitted facts and of probabilities, and of the conclusions drawn from them. For, on questions such as these minds of all kinds may be well employed. Here there will be occasion even for those which are not unconditionally praiseworthy, such as those that habitually doubt, and those to whom the invention of arguments is more pleasing than the mere search for truth. Nay, we may be able to observe the utility even of error. We may not, indeed, wish for a prevalence of errors; they are not more desirable than are the crime and misery which evoke charity. And yet in a Congress we may palliate them, for we may see how, as we may often read in history, errors, like doubts and contrary pleadings, serve to bring out the truth, to make it express itself in clearest terms and show its whole strength and value. Adversity is an excellent school for truth as well as for virtue.

But that which I would chiefly note, in relation to the great variety of minds which are here, is that it is characteristic of that mental pliancy and readiness for variation which is essential to all scientific progress, and which a great International Congress may illustrate and promote.

In all the subjects for discussion we look for the attainment of some novelty and change in knowledge or belief; and after every such change there must ensue a change in some of the conditions of thinking and of working. Now for all these changes minds need to be pliant and quick to adjust themselves. For all progressive science there must be minds that are young, whatever may be their age.

Just as the discovery of auscultation brought to us the necessity for a refined cultivation of the sense of hearing, which was before of only the same use in medicine as in the common business of life; or, as the employment of the numerical method in estimating the value of facts required that minds should be able to record and think in ways previously unused; or, as the acceptance of the doctrine of evolution has changed the course of thinking in whole departments of science, so is it, in less measure, in every less advance of knowledge. All such advances change the circumstances of the mental life, and minds that can not or will not adjust themselves become less useful, or must, at least, modify their manner of utility. They may continue to be the best defenders of what is true; they may strengthen and expand the truth, and may apply it in practice with all the advantages of experience; they may thus secure the possessions of science and use them well, but they will not increase them.

It is with minds as with living bodies. One of their chief powers is in their self-adjustment to the varying conditions in which they have to live. Generally those species are the strongest and most abiding that can thrive in the widest range of climate and of food. And of all the races of men they are the mightiest and most noble who are, or by self-adjustment can become, most fit for all the new conditions of existence in which by various changes they may be placed. These are they who prosper in great changes of their social state; who, in successive generations, grow stronger by the production of a population so various that some are fitted to each of all the conditions of material and mode of life which they can discover or invent. These are most prosperous in the highest civilization; these whom nature adapts to the products of their own arts.

Or, among other groups, the mightiest are those who are strong alike on land and sea; who can explore and

colonize, and in every climate can replenish the earth and subdue it; and this not by tenacity or mere robustness, but rather by pliancy and the production of varieties fit to abide and increase in all the various conditions of the world around.

Now, it is by no distant analogy that we trace the likeness between these in their successful contests with the material conditions of life and those who are to succeed in the intellectual strife with the difficulties of science and of art. There must be minds which in variety may match with all the varieties of the subject-matters and minds which, at once or in a swift succession, can be adjusted to all the increasing and changing modes of thought and work.

Such are the minds we need; or, rather, such are the minds we have; and these in great meetings prove and augment their worth. Happily the natural increase in the variety of minds in all cultivated races is—whether as cause or as consequence—nearly proportionate to the increasing variety of knowledge. And it has become proverbial, and is nearly true in science and art, as it is in commerce and in national life, that, whatever work is to be done, men are found or soon produced who are exactly fit to do it.

But it need not be denied that, in possession of this first and chiefest power for the increase of knowledge, there is a source of weakness. In works done by dissimilar and independent minds, dispersed in different fields of study, or only gathered into self-assorted groups, there is apt to be discord and great waste of power. There is, therefore, need that the workers should from time to time be brought to some consent and unity of purpose; that they should have opportunity for conference and mutual criticism, for mutual help and the tests of free discussion. This it is which, on the largest scale and most effectually, our Congress may achieve; not, indeed, by striving after a useless and happily impossible uniformity of mind or method, but by diminishing the lesser evil of waste and discord which is attached to the far greater good of diversity and independence. Now, as in numbers and variety the Congress may represent the whole multitude of workers everywhere dispersed, so in its gathering and concord it may represent a common consent that, though we may be far apart and different, yet our work is and shall be

essentially one; in all its parts mutually dependent, mutually helpful, in no part complete or self-sufficient. We may thus declare that as we who are many are met to be members of one body, so our work for science shall be one though manifold; that as we, who are of many nations, will, for a time, forget our nationalities, and will even repress our patriotism, unless for the promotion of a friendly rivalry, so will we in our work, whether here and now, or everywhere and always, have one end and one design—the promotion of the whole science and whole art of healing.

It may seem to be a denial of this declaration of unity that after this general meeting we shall separate into sections more numerous than in any former Congress. Let me speak of these sections to defend them; for some maintain that even in such a division of studies as these may encourage, there is a mischevious dispersion of forces. The science of medicine, which used to be praised as one and indivisible, is broken up, they say, among specialists, who work in conflict rather than in concert, and with mutual distrust more than mutual help.

But let it be observed that the sections which we have instituted are only some of those which are already recognized in many countries, in separate societies, each of which has its own place and rules of self-government and its own literature. And the division has taken place naturally in the course of events which could not be hindered. For the partial separation of medicine, first from the other natural sciences, and now into sections of its own, has been due to the increase of knowledge being far greater than the increase of individual mental power.

I do not doubt that the average mental power constantly increases in the successive generations of all well-trained people, but it does not increase so fast as knowledge does, and thus, in every science, as well as in our own, a small portion of the whole sum of knowledge has become as much as even a large mind can hold and duly cultivate. Many of us must, for practical life, have a fair acquaintance with many parts of our science, but none can hold it all; and for complete knowledge, or for research, or for safely thinking out beyond what is known, no one can hope for success unless by limiting himself within the few divisions of the science for which, by nature or by education, he is best fitted. Thus our divisions into sections is

only an instance of that division of labor which, in every prosperous nation, we see in every field of active life, and which is always justified by more work better done.

Moreover, it can not be said that in any of our sections there is not enough for a full strong mind to do. If any one will doubt this, let him try his own strength in the discussions of several of them.

In truth, the fault of specialism is not in narrowness, but in the shallowness and the belief in self-sufficiency with which it is apt to be associated. If the field of any specialty in science be narrow, it can be dug deeply. In science, as in mining, a very narrow shaft, if only it be carried deep enough, may reach the richest stores of wealth and find use for all the appliances of scientific art. Not in medicine alone, but in every department of knowledge, some of the grandest results of research and of learning, broad and deep, are to be found in monographs on subjects that, to the common mind, seemed small and trivial.

And study in a Congress such as this may be a useful remedy for self-sufficiency. Here every group may find a rare occasion, not only for an opportune assertion of the supreme excellence of its own range and mode of study, but for the observation of the work of every other. Each section may show that its own facts must be deemed sure, and that by them every suggestion from without must be tested; but each may learn to doubt every inference of its own which is not consistent with the facts or reasonable beliefs of others; each may observe how much there is in the knowledge of others which should be mingled with its own; and the sum of all may be the wholesome conviction of all that we can not justly estimate the value of a doctrine in one part of our science till it has been tried in many or in all.

We were taught this in our schools; and many of us have taught that all the parts of medical science are necessary to the education of the complete practitioner. In the independence of later life, some of us seem too ready to believe that the parts we severally choose may be self-sufficient, and that what others are learning can not much concern us. A fair study of the whole work of the Congress may convince of the fallacy of this belief. We may see that the test of truth in every part must be in the patient and impartial trial of its adjustment with what is

true in the other. All perfect organizations bear this test; all parts of the whole body of scientific truth should be tried by it.

Moreover, I would not, for a scientific point of view, admit any estimate of the comparative importance of the several divisions of our science, however widely they may differ in their present utilities. And this I would think right, not only because my office as president binds me to a strict impartiality and to the claim of freedom of research for all, but because we are very imperfect judges of the whole value of any knowledge, or even of single facts. For every fact in science, wherever gathered, has not only a present value, which we may be able to estimate, but a living and germinal power of which none can guess the issue.

It would be difficult to think of anything that seemed less likely to acquire practical utility than those researches of the few naturalists who, from Leeuwenhoeck to Ehrenberg, studied the most minute of living things, the Vibrionidæ. Men boasting themselves as practical might ask, "What good can come of it?" Time and scientific industry have answered, "This good: those researches have given a more true form to one of the most important practical doctrines of organic chemistry; they have introduced a great beneficial change in the most practical part of surgery; they are leading to one as great in the practice of medicine; they concern the highest interests of agriculture, and their power is not yet exhausted."

And as practical men were, in this instance, incompetent judges of the value of scientific facts, so were men of science at fault when they missed the discovery of anæsthetics. Year after year the influences of laughing gas and of ether were shown: the one fell to the level of the wonders displayed by itinerant lecturers, students made fun with the other; they were the merest practical men, men looking for nothing but what might be straightway useful, who made the great discovery which has borne fruit not only in the mitigation of suffering, but in a wide range of physiological science.

The history of science has many similar facts, and they may teach that any man will be both wise and dutiful if he will patiently and thoughtfully do the best he can in the field of work in which, whether by choice or chance, his lot is cast. There let him, at least, search for truth,

reflect on it, and record it accurately; let him imitate that accuracy and completeness of which I think we may boast that we have, in the descriptions of the human body, the highest instance yet attained in any branch of knowledge. Truth so recorded can not remain barren.

In thus speaking of the value of careful observation and records of facts, I seem to be in agreement with the officers of all the sections; for, without any intended consent, they have all proposed such subjects for discussion as can be decided only by well-collected facts and fair direct inductions from them. There are no questions on theories or mere doctrine. This, I am sure, may be ascribed, not to any disregard of the value of good reasoning or of reasonable hypotheses, but partly to the just belief that such things are ill-suited for discussion in large meetings, and partly to the fact that we have no great opponent schools, no great parties named after leaders or leading doctrines about which we are in the habit of disputing. In every section the discussions are to be on definite questions, which, even if they be associated with theory or general doctrines, may yet be soon brought to the test of fact; there is to be no use of doctrinal touchstones.

I am speaking of no science but our own. I do not doubt that in others there is advantage in dogma, or in the guidance of a central organizing power, or in divisions and conflicting parties. But in the medical sciences I believe that the existence of parties founded on dominant theories has always been injurious; a sign of satisfaction with plausible errors, or with knowledge which was even for the time imperfect. Such parties used to exist, and the personal histories of their leaders are some of the most attractive parts of the history of medicine; but, although in some instances an enthusiasm for the master-mind may have stirred a few men to unusual industry, yet very soon the disciples seem to have been fascinated by the distinctive doctrine, content to bear its name, and to cease from active scientific work. The dominance of doctrine has promoted the habit of inference, and repressed that of careful observation and induction. It has encouraged that fallacy to which we are all too prone, that we have at length reached an elevated sure position on which we may rest, and only think and guide. In this way specialism in doctrine or in method of study has hindered the progress of science more than the specialism which

has attached itself to the study of one organ or of one method of practice. This kind of specialism may enslave inferior minds: the specialism of doctrine can enchant into mere dreaming those that should be strong and alert in the work of free research.

I speak the more earnestly of this because it may be said, if our Congress be representative, as it surely is, may we not legislate? May we not declare some general doctrines which may be used as tests and as guides for future study? We had better not.

The best work of our International Congress is in the clearing and strengthening of the knowledge of realities; in bringing, year after year, all its force of numbers and varieties of minds to press forward the demonstration and diffusion of truth as nearly to completion as may from year to year be possible. Thus, chiefly, our Congress may maintain and invigorate the life of our science. And the progress of science must be as that of life. It sounds well to speak of the temple of science and of building and crowning the edifice. But the body of science is not as any dead thing of human work, however beautiful; it is as something living, capable of development and a better growth in every part. For as in all life the attainment of the highest condition is only possible through the timely passing-by of the less good, that it may be replaced by the better, so is it in science. As time passes, that which seemed true and was very good becomes relatively imperfect truth, and the truth more nearly perfect takes its place.

We may read the history of the progress of truth in science as a palæontology. Many things which, as we look far back, appear, like errors, monstrous and uncouth creatures, were, in their time, good and useful, as good as possible. They were the lower and less perfect forms of truth which, amid the floods and stifling atmospheres of error, still survived; and just as each successive condition of the organic world was necessary to the evolution of the next following higher state, so from these were slowly evolved the better forms of truth which we now hold.

This thought of the likeness between the progress of scientific truth and the history of organic life may give us all the better courage in a work which we can not hope to complete, and in which we see continual and sometimes disheartening change. It is, at least, full of comfort to

those of us who are growing old. We that can read in memory the history of half a century might look back with shame and deep regret at the imperfection of our early knowledge if we might not be sure that we held, and sometimes helped onward, the best things that were in their time possible, and that they were necessary steps to the better present, even as the present is to the still better future. Yes, to the far better future; for there is no course of nature more certain than is the upward progress of science. We may seem to move in circles, but they are the circles of a constantly ascending spiral; we may seem to sway from side to side, but it is only as on a steep ascent which must be climbed in zigzag.

What may be the knowledge of the future none can guess. If we could conceive a limit to the total sum of mental power which will be possessed by future multitudes of well-instructed men, yet could we not conceive a limit to the discovery of the properties of materials which they will bend to their service. We may find the limit of the power of our unaided limbs and senses; but we can not guess at a limit to the means by which they may be assisted, or to the invention of instruments which will become only a little more separate from our mental selves than are the outer sense-organs with which we are constructed.

In the certainty of this progress the great question for us is, What shall we contribute to it? It will not be easy to match the recent past. The advance of medical knowledge within one's memory is amazing whether reckoned in the wonders of the science not yet applied, or in practical results in the general lengthening of life, or, which is still better, in the prevention and decrease of pain and misery, and in the increase of working power. I can not count or recount all that in this time has been done; and I suppose there are very few, if any, who can justly tell whether the progress of medicine has been equal to that of any other great branch of knowledge during the same time. I believe it has been; I know that the same rate of progress can not be maintained without the constant and wise work of thousands of good intellects; and the mere maintenance of the same rate is not enough, for the rate of the progress of science should constantly increase. That in the last fifty years was at least twice as great as that in the previous fifty. What will it be in the next,

or, for a more useful question, What shall we contribute to it?

I have no right to prescribe for more than this week. In this let us do heartily the proper work of the Congress, teaching, learning, discussing, looking for new lines for research, planning for mutual help, forming new friendships. It will be hard work if we will do it well; but we have not met for mere amusement or for recreation, though for that I hope you will find provision, and enjoy it the better for the work preceding it.

And when we part let us bear away with us, not only much more knowledge than we came with, but some of the lessons for our conduct in the future which we may learn in reflecting the work of our Congress.

In the number and intensity of the questions brought before us we may see something of our responsibility. If we could gather into thought the amounts of misery or happiness, of helplessness, or of power for work, which may depend on the answers to all the questions that will come before us, this might be a measure of our responsibility. But we can not count it; let us imagine it; we can not even in imagination exaggerate it. Let us bear it always in our mind, and remind ourselves that our responsibility will constantly increase. For, as men become in the best sense better educated, and the influence of scientific knowledge on their moral and social state increases, so, among all sciences there is none of which the influence and, therefore, the responsibility will increase more than ours, because none more intimately concerns man's happiness and working power.

But, more clearly in the recollection of the Congress, we may be reminded that in our science there may be, or, rather, there really is, a complete community of interest among men of all nations. On all the questions before us we can differ, discuss, dispute, and stand in earnest rivalry; but all consistently with friendship, all with readiness to wait patiently till more knowledge shall decide which is in the right. Let us resolutely hold to this when we are apart; let our internationality be a clear abiding sentiment, to be, as now, declared and celebrated at appointed times, but never to be forgotten; we may, perhaps, help to gain a new honor for science, if we thus suggest that in many more things, if they were as deeply and dispassionately studied, there might be found the

same complete identity of international interests as in ours.

And then, let us always remind ourselves of the nobility of our calling. I dare to claim for it that among all the sciences ours, in the pursuit and use of truth, offers the most complete and constant union of those three qualities which have the greatest charm for pure and active minds —novelty, utility, and charity. These three, which are sometimes in so lamentable disunion, as in the attractions of novelty without either utility or charity, are in our researches so combined that, unless by force or willful wrong, they hardly can be put asunder. And each of them is admirable in its kind. For in every search for truth we can not only exercise curiosity, and have the delight—the really elemental happiness—of watching the unveiling of a mystery, but, on the way to truth, if we look well round us, we shall see that we are passing among wonders more than the eye or mind can fully apprehend. And as one of the perfections of nature is that in all her works wonder is harmonized with utility, so is it with our science. In every truth attained there is utility either at hand or among the certainties of the future. And this utility is not selfish; it is not in any degree correlative with money-making; it may generally be estimated in the welfare of others better than in our own. Some of us may, indeed, make money and grow rich; but many of those that minister even to the follies and vices of mankind can make much more money than we. In all things costly and vainglorious they would far surpass us if we would compete with them. We had better not compete where wealth is the highest evidence of success; we can compete with the world in the nobler ambition of being counted among the learned and the good who strive to make the future better and happier than the past. And to this we shall attain if we will remind ourselves that as in every pursuit of knowledge there is the charm of novelty, and in every attainment of truth utility, so in every use of it there may be charity. I do not mean the charity which is in hospitals or in the service of the poor, great as is the privilege of our calling in that we may be its chief ministers, but that wider charity which is practiced in a constant sympathy and gentleness, in patience and self-devotion. And it is surely fair to hold that, as in every search for knowledge we may strengthen our intel-

lectual power, so in every practical employment of it we may, if we will, improve our moral nature; we may obey the whole law of Christian love, we may illustrate the highest induction of scientific philanthropy.

Let us, then, resolve to devote ourselves to the promotion of the whole science, art, and charity of medicine. Let this resolve be to us as a vow of brotherhood; and may God help us in our work.

Pathology and Diagnosis of Trichiniasis.

BY J. M. PARTRIDGE, A. M., M. D., SOUTH BEND, IND.

NEARLY two thousand years ago it was written of Herod, King of Judea, that he was "eaten of worms and gave up the ghost." Since that time no doubt thousands and tens of thousands of human beings, from the royal rank of King Herod down to the lowest order of men, have been slain by parasites, and they have died in ignorance of the cause of their pangs, and their physicians have attributed their deaths to every disease known among men; but on none of their tomb-stones was this truth ever written, "Died of Trichiniasis."

The very obscure character of this disease, and the remarkable barrenness of the medical literature of all schools on this subject, have induced me to present to this society some thoughts thereon, deduced from actual observation and experience.

In January, 1879, I was called to see a German family consisting of the father, mother and three children. I found them all seriously ill, and similarly affected. Three physicians had preceded me. The first diagnosticated *bilious diarrhœa*, the second, *typhoid fever*, and the third was prescribing for *inflammatory rheumatism*—which their symptoms so closely resembled that a solitary case might deceive the most careful observer. I also learned that other members of the family were similarly afflicted. All these facts led me at once to suspect some common toxical cause, and I made a thorough examination as to the sanitary condition of the well, cellar, and premises generally, but gained no clue to the difficulty until I entered the domain of the commissary or culinary department. I now learned that a few days before the sickness began,

they had purchased and slaughtered a hog, of which they had eaten freely. Upon carefully reviewing the history of these cases, I became convinced that they were infested with *trichina spiralis* and that the disease had reached its third stage, or that of muscular perforation and consequent inflammation.

My views were made known to several medical gentlemen who were treating some of these cases, but not one of them agreed with my diagnosis. However, the newspaper fraternity, ever on the alert for a new sensation, gave my opinion the greatest publicity. I now waited very anxiously the advent of the fourth stage of the disease by which my opinion was to be triumphantly confirmed, or as publicly refuted.

It came. In a very few days Mr. S. began to cough and complain of pain in his lungs, great dyspnœa, bloody expectoration, hectic fever and prostration.

He died in twenty-eight days from the onset of the disease.

A post-mortem examination, by the aid of the microscope, demonstrated that his muscles were literally filled with parasites; as many as thirteen having been counted in $\frac{1}{10}$ of a grain of flesh.

There were fourteen members of the family and relatives who partook of this pork, and all were more or less seriously affected with the disease. Two died. There were three married women in different stages of pregnancy from six weeks to four months. All three miscarried in the third stage, and all recovered.

Nine physicians, representing three different schools of medicine, one of them an ex-President of an Old School medical college, prescribed for these cases; not one of whom agreed with my diagnosis or recognized the existence of the parasites till their presence was demonstrated by the microscope.

Da Costa believes that in most cases there is no certainty of diagnosis short of vivisection and actual microscopic examination of the flesh of our patients; but if we bear in mind that this disease has its different and distinct stages of development, and having in any case a suspicion of *trichiniasis* in its first stage, and in due time there follow definitely marked, characteristic symptoms of the second stage, our suspicion of a possibility has now advanced to a *probability*. And, moreover, if there supervene, in

their appointed time and order, prominently characteristic symptoms of the third and fourth stage, we may be as positive and unerring in our diagnosis as in most other diseases. From these general observations on trichiniasis, I proceed to state as concisely as possible my views of its pathology and diagnosis. When by eating infected and imperfectly cooked meat, the parasite is taken into the living stomach in its encysted and dormant state, and by the process of digestion it is liberated from its cell and restored to active life, it immediately attacks and attaches itself to the mucous membrane of the stomach and bowels with which it is brought in contact.

For about two days it lacerates and gorges itself with this mucous surface, and when becoming sexually mature, it deposits thousands of young, hair-like larvæ; which immediately attack and for two days more greatly exaggerate this *mucous irritation* and *inflammation*, which is the characteristic pathological condition of the first stage. The diagnostic symptoms of the first stage are manifestly frequent, uncontrollable and long continued vomiting and purging of mucus, with terrible nausea and loathing of food and drink. Beyond the first stage or period of mucous irritation, the original or parent parasite is not recognized.

2. In the second stage the young parasite pierces the stomach and intestines and invades the adjacent glandular structures, causing irritation and inflammation of these organs, and producing a pathological condition similar to that of typhoid fever in its earlier stages.

The symptoms of the second stage are pain and soreness of the bowels with tympanites, low continued fever, diarrhœa, debility, loss of appetite and of sleep.

3. The parasite next manifests itself in the muscular system, the method of reaching which has hitherto been a disputed point, whether by continuously perforating and traversing the solid tissues or by the circulatory system; the probabilities, however, seem to favor the latter opinion. Indeed, I have a case in point that seems to demonstrate it. Among my patients was a nursing child, of whom the mother affirmed that it had not tasted the infected meat, and yet this child had the same symptoms as other members of the family, of trichiniasis in the third and fourth stages. Evidently this child received its parasite through the lacteal circulation. It is fair to infer,

therefore, that the parasites are carried from the lacteal into the general circulation, thence distributed by the capillaries through all the muscular structures. Here their presence is soon painfully realized.

Penetrating and lacerating the tissues, they gorge themselves therewith, until in a few days they have attained their growth and first form of development. This mutilating and consequent inflammation and weakening of the muscles constitutes the characteristic pathological condition of the *third stage.*

The diagnostic symptoms in the third stage are excessive swelling, soreness and weakness of the muscles, with fever, great anxiety and dyspnœa; the symptoms closely resembling those of inflammatory rheumatism.

The appearance of the fourth stage is recognized by greatly increased dyspnœa, frequent coughing, with sanguino-purulent expectoration, excessive bloating of the face and extremities, anxiety, sleeplessness and utter prostration. And if these different stages have been severe the patient dies, certainly and speedily, with symptoms of *typhoid pneumonia.*

I feel confident that you will find in this paper valuable aids to the detection of this occult disease, which have not before been published. To fail in diagnosis is a reproach you can not well afford to endure, and yet it is a humiliating but undeniable fact that after the second, and probably beyond the first stage of the disease, medical aid is of little aid. As physicians, your usefulness depends greatly on your prophylactic ability. You must educate the people in *decent* and *thorough* cookery. Rice is one of the simplest articles of diet, and yet death may result from eating half-boiled rice, by its swelling and over-distending the stomach.

If pork is thoroughly cooked there is absolutely no danger from trichiniasis. In a temperature of 212° parasitic life can not endure.

And here it may not be out of place to remark that just at this time there is great excitement in commercial circles on account of the unjust and unwarranted exclusion of American pork from European markets. Our Secretary of State is vigorously investigating this matter and will no doubt find that the first cases of trichiniasis on record were found in Europe, from eating European pork; and since that time there has been in proportion to the amount

consumed, greater fatality from the lean hogs of Europe than from the well-fed hogs of America. And he will also find that this should be a matter of domestic education rather than of commercial legislation.

SELECTIONS.

The London Lancet's Comments on the Gunshot Wound of the President.

THE *Lancet*, of September 24, has quite a lengthy article on the gunshot wound of President Garfield, which we print in full, as it will be found quite interesting and highly instructive.—ED. NEWS.

It is with great regret that we have to record the fatal termination of the injuries received on July 2d by the President of the United States. As we have noted the progress of the distinguished patient week by week, we have been compelled to speak in the most guarded manner of the probable result of the injury, partly because of the scanty information in our possession, but still more from the extreme danger attending such injuries as he received. His iron constitution has borne up in a wonderful manner under illness that would long ago have proved fatal to one of less vital power, and this has afforded some ground for hope, but the extreme exhaustion and evidence of blood-poisoning have induced us to express a very serious view of the probable termination of the case. Unfortunately, the event has justified such an opinion, and our readers will have been quite prepared for the news which reached this country on Tuesday last.

The facts revealed at the autopsy, so far as they have reached this country, put us in a position to trace the true course of the illness and its complications, and afford an explanation of some hitherto unsolved problems. It was on July 2d that the injury was inflicted; the bullet entered the back to the right of the spine, between the tenth and eleventh ribs, and took a course downward; it broke the eleventh rib, and then, being deflected to the left, passed through the body of the first lumbar vertebra, severely splintering it, and ultimately lodged behind the

peritoneum, two inches and a half to the left of the spine, below the pancreas. There was severe shock, and signs of internal hemorrhage, which threatened to be fatal, were observed; but the patient rallied, and the most marked local symptom was severe pain down the right leg into the foot, caused by pressure on or injury to one of the lumbar nerves passing to the anterior crural trunk. Traumatic fever was marked, but not excessive, and as there was no evidence of visceral lesion, hopes of recovery were entertained. The first grave indication was the persistence of pyrexia after the establishment of suppuration, and its increase in the second week. On July 23d two rigors occurred, and it was deemed necessary to make a counter-opening in the loin, which gave exit to a considerable quantity of discharge; the pulse then fell, and the patient's strength and courage were so good as to inspire hope. But a disappointment occurred, for a few days later the temperature and pulse rose. As it was evident there was a bagging of pus along the wound, on August 8th a second counter-opening was made with temporary good effect; but now for the first time the bulletins contained references to the weakness of the pulse and general evidence of debility. To this was added extreme gastric irritability, so that on August 11th it was necessary to suspend entirely all attempts to give food by the mouth, and recourse was had to nutritive enemata; with this there was increasing exhaustion, which became so intense that for a time it was considered that the end was at hand. Again hope was excited, and nutritive enemata were retained and absorbed, the stomach regained some of its functional powers, and small quantities of fluid nourishment were taken by the mouth. Now a new and the most serious phase was added to the case in the form of an abscess in the parotid gland, which afforded undoubted evidence of blood-poisoning, the gravity of which was increased by the rapid and extreme emaciation, and the addition of a wandering delirium to the other signs of exhaustion. The parotid abscess was opened on August 21th. A few days later a second incision was made into a further collection of pus close by, and now the value of the President's robust constitution was shown by the gallant struggle he made against the progress of blood-poisoning—a struggle against enormous odds, but in which his success was at times such as to inspire some feeble

hope. Then came a period of daily fluctuation, and certainly no progress toward recovery, in which nutrient enemata were again resorted to; and on September 6th President GARFIELD was removed to Long Branch, a more healthy home on the shores of the Atlantic. The journey was fairly well borne, but now signs of hypostatic pulmonary congestion showed themselves, and the end was not far off. On September 17th a rigor occurred; on the 19th, two rigors; and late in the evening of that day, just as he was settling to rest for the night, the patient was seized with severe præcordial pain, quickly became unconscious and died, the constitution which had borne up against so much being at last overcome by hemorrhage from a mesenteric artery. The autopsy revealed in addition to the line of the bullet mentioned above, and the ulceration into the mesenteric artery from its track, a burrowing of pus from the wound on the right of the spine behind the kidney, quite down to the groin; a second large abscess close to the gall-bladder, and bounded by the liver and colon; a small abscess in the left kidney; severe bronchitis and broncho-pneumonia—what is more generally known as hypostatic pneumonia, or congestion of the bases of both lungs; but no pulmonary abscesses, no cardiac thrombosis, and no signs of putrid embolism.

It is not difficult to read the case in the light of its entire history, and the pathological changes found after death. For it has exhibited in a very typical manner the special features and perils of gunshot wounds which do not prove immediately fatal from their direct effects. The wound was devious and long, complicated with bruising of its edges and splintering of bones, and healing by primary intention was out of the question. As soon as suppuration was established, the tortuous track with its swollen walls became blocked at places; thorough drainage was impossible, bagging of matter ensued, partly in the more superficial region, where it was readily liberated by counter-openings, but also deep behind the abdominal cavity; and then ensued rigors and exhausting fever. But the suppurating wound in bruised tissues freely exposed to the air, with particles of dirt carried in by the bullet, soon became the seat of decomposition; and the putrid matter not finding a free vent, absorption into the blood of septic material took place, and it was this that led the

way to the fatal event. The parotid abscess was the first distinct indication of blood-poisoning, and we must express our astonishment that surgeons were found who refused to admit this interpretation of that symptom. But read in the light of the post-mortem examination it is most probable that the extreme gastric irritability, and the rise of temperature which preceded the parotid affection, were caused by the formation of the large abscess close to the liver. The telegraphic accounts are to the effect that this abscess was not in the liver, but only bounded by it. If this were its original seat, it must have formed in the peritoneal cavity—a most unusual thing. The far more likely solution is that quite on the suface of the liver a small abscess developed, which, after adhesions had formed around it, burst and greatly enlarged. The fatal hemorrhage was not directly caused by the septicæmia, but by ulceration spreading from the wound; and it is more accurate to say that the President died with septicæmia than from septicæmia, although the blood-poisoning would quickly have proved fatal. The great loss of weight was also a marked feature of the case, and was due to the continued fever, the discharge, the septic intoxication, and the failure of the digestive functions.

The fact that perhaps deserves the most prominent notice in the consideration of this case is that the original injury was not one necessarily fatal; death resulted solely from "accidents" in its course; and it may be taken as so far an example of a failure of surgery. In its path the bullet did not wound any vital part, and it became safely encysted; and had the sinuous wound it made only closed up, all would have been well. Why did not the wound thus heal up? The explanation is sufficiently obvious; its walls were bruised and so injured that primary union was impossible; the bruised and broken parts became sloughs and sequestra, and they and the adventitious matters carried into the wound had to be cast off by suppuration. But the path of the ball was very tortuous and narrow, and this condition was exaggerated by the swelling ensuing upon the injury and suppuration, and so the pus formed in the deeper parts of the wound, finding no ready exit, accumulated and burrowed, some being liberated by the surgeon's knife, but one collection spreading down into the iliac fossa. Such a wound only too readily be-

came putrid, and the retention of pent-up putrid matter almost ensured absorption of septic poison and death. The necessary treatment then of the injury was first of all efficient drainage of the whole length of the wound, and prevention of decomposition of the discharge and the separating sloughs. It will be asked, could this have been done? Although the indications were obvious, we do not see how they could have been carried out with the means at present known. There was, first, the difficulty of ascertaining the exact course of the ball, and, as the event shows, even Bell's electric probe would only have misled the surgeons. Had its path been as they at first imagined, through the liver and peritoneal cavity, any enlargement of the wound in that viscus would have been fraught with great danger, nor would it have secured the end in view; while a thorough disinfection of the wound would have been an impossibility, and the attempt a very dangerous procedure. But had the surgeons known the exact course of the bullet, could they have succeeded in such an endeavor? To have secured free drainage would at any rate have exposed the patient to the risk of wounding a large vessel, or of opening the peritoneal cavity, with possible injury to the spinal cord and nerves. But it may be regarded as an open question how far successful an attempt to render the wound aseptic might have been; had it proved possible, the mere bagging of matter might have been subsequently dealt with. It would be unjust, however, to impute blame to the surgeons in charge; and it is a matter of congratulation that they were not led away by any vulgar desire to extract the bullet. The bullet had done no harm since it once reached its resting place near the pancreas; and its extraction *per se* would not have influenced at all the subsequent course of the case.

Blood-poisoning is such a wide term that we can not dismiss the case with that diagnosis alone. In distinguishing its three forms—septic intoxication, septic infection and embolic pyæmia—we may exclude the last altogether, as the autopsy did not show any coarse embolic abscesses, although the repeated rigors just before death gave countenance to the view that they were being formed. In the pyrexia and rapid wasting and exhaustion we probably see the effects of the continuous absorption of a septic poison having no power of multiplication within

the body—septic intoxication. But certain it is that the abscesses in the liver, kidney and parotid offered abundant evidence of septic infection, or the absorption of a poison having the power of multiplying in the body, and associated with the presence of micrococci. Such abscesses are common in the kidney, where they seem to commence in masses of micrococci plugging the glomeruli, and their true nature is presumed to be similar in other parts. Had life been prolonged, it is very probable that such abscesses would have formed in the bases of the lungs, the vitality of which was lowered by the hypostatic congestion. Septic parotid abscesses are not very rare, although the Pyæmia Committee of the Pathological Society met with only one instance in their investigations.

In this connection we are able to give a definite value to the splendid constitution of the patient, for while the poisonous micrococci are capable of multiplying indefinitely in the body, living tissues have the power of destroying them, and the President showed his wonderful endurance and vitality in that these germs were destroyed, and that he withstood for so long the effects of the dread disease which had seized him. This form of blood-poisoning, when chronic, may run its course with but little pyrexia, although not with a normal temperature all through the day. There have been many expressions of surprise at the daily records of the temperature being so low and so inconsistent with the state of the pulse; but it must be remembered that the bulletins merely gave the temperature at certain hours, and we presume that the intermediate temperatures were often pyrexial. As to the minor details of the treatment we can say nothing; we are not acquainted with them, nor with the many finer and varying shades of the case, but the fact that life had been so long preserved is the best of all evidence in favor of the surgeons.

Pasteur's Address on the Germ-Theory.

[From the British Medical Journal.]

M. PASTEUR, after referring to his cordial reception by the International Medical Congress, and regarding it as a mark of homage paid to his labors during twenty-five years upon the nature of ferments, proceeded as follows:

Your cordial welcome has revived within me the lively feeling of satisfaction I experienced when your great surgeon Lister declared that my publication in 1857 on milk-fermentation had inspired him with his first ideas on his valuable surgical method. You have re-awakened the pleasure I felt when our eminent physician Dr. Davaine declared that his labors upon *charbon* (splenic fever or malignant pustules) had been suggested by my studies on butyric fermentation and the vibrio which is characteristic of it.

Gentlemen, I am happy to be able to thank you by bringing to your notice a new advance in the study of micro-organisms as applied to the prevention of transmissible diseases—diseases which for the most part are fraught with terrible consequences, both for man and domestic animals. The subject of my communication is inoculation in relation to chicken-cholera and splenic fever, and a statement of the method by which we have arrived at these results—a method the fruitfulness of which inspires me with boundless anticipations.

Before discussing the question of splenic fever vaccine, which is the most important, permit me to recall the results of my investigations of chicken-cholera. It is through this inquiry that new and highly important principles have been introduced into science concerning the virus or contagious quality of transmissible diseases. More than once in what I am about to say I shall employ the expression virus culture, as formerly. In my investigations on fermentation I use the expressions, the culture of milk-ferment, the culture of the butyric vibrio, etc. Let us take a fowl which is about to die of chicken-cholera, and let us dip the end of a delicate glass rod in the blood of the fowl with the usual precautions, upon which I need not here dwell. Let us then touch with this charged point some *bouillon de poule*, very clear, but first of all rendered sterile under a temperature of about 115° C. (239° F.), and under conditions in which neither the outer air nor the vases employed can introduce exterior germs—those germs which are in the air or on the surface of all objects. In a short time, if the little culture vase be placed in a temperature of 25° to 35° C. (77° to 95° F.), you will see the liquid become turbid and full of tiny micro-organisms, shaped like the figure 8, but often so small that under a high magnifying power they appear like points. Take

from this vase a drop as small as you please, no more than can be carried on the point of a glass rod as sharp as a needle, and touch with this point a fresh quantity of sterilized *bouillon de poule* placed in a second vase and the same phenomenon is produced. You deal in the same way with a third culture vase, with a fourth, and so on to a hundred, or even a thousand, and invariably within a few hours the culture liquid becomes turbid and filled with the same minute organisms. At the end of two or three day's exposure to a temperature of about 30° C. (86° F.), the thickness of the liquid disappears, and a sediment is formed at the bottom of the vase. This signifies that the development of the minute organism has ceased—in other words, all the little points that caused the turbid appearance of the liquid have fallen to the bottom of the vase; and things will remain in this condition for a longer or shorter time, and for months even, without either the liquid or the deposit undergoing any visible modification, inasmuch as we have taken care to exclude the germs of the atmosphere. A little stopper of cotton sifts the air which enters or issues from the vase through changes of temperature.

Let us take one of our series of culture preparations—the hundreth or the thousandth, for instance—and compare it in respect to its virulence with the blood of a fowl which has died of cholera; in other words, let us inoculate under the skin ten fowls, for instance, each separately with a tiny drop of infectious blood and ten others with a similar quantity of the liquid in which the deposit has first been shaken up. Strange to say, the latter ten fowls will die as quickly and with the same symptoms as the former ten. The blood of all will be found to contain after death the same minute infectious organisms. This equality, so to speak, in the virulence both of the culture preparation and of the blood is due to an apparently trivial circumstance. I have made a hundred culture preparations—at least, I have understood that this was done—without leaving any considerable interval between the impregnations. Well, here we have the cause of the equality in the virulence.

Let us now repeat exactly our successive cultures with this single difference, that we pass from one culture to that which follows it, from the hundreth to, say, the hundred and first, at intervals of a fortnight, a month, two months,

three months, or ten months. If, now, we compare the virulence of the successive cultures, a great change will be observed. It will be readily seen from an inoculation of a series of ten fowls, that the virulence of one culture differs from that of the blood and from that of a preceding culture, when a sufficiently long interval elapses between the impregnation of one culture with the micro-organism of the preceding. More than that, we may recognize by this mode of observation that it is possible to prepare cultures of varying degrees of virulence. One preparation will kill eight fowls out of ten, another five out of ten, another one out of ten, another none at all, although the micro-organism may still be cultivated; in fact, what is no less strange, if you take each of these cultures of attenuated virulence at a point of departure in the preparation of successive cultures and without appreciable interval in the impregnation, the whole series of these cultures will reproduce the attenuated virulence of that which has served as the starting-point. Similarly, where the virulence is null it produces no effect.

How, then, it may be asked, are the effects of the attenuated virulences revealed in the fowls? They are revealed by a local disorder, by a morbid modification more or less profound in a muscle, if it is a muscle which has been inoculated with the virus. The muscle is filled with micro-organisms, which are recognized easily because the attenuated ones have almost the bulk, the form, and the appearance of the most virulent. But why is not the local disorder followed by death? For the moment, let us answer by a statement of facts. They are these: the local disorder ceases of itself more or less speedily, the micro-organism is absorbed and digested, if one may say so, and little by little the muscle regains its normal condition. Then the disease has disappeared. When we inoculate with the micro-organism, the virulence of which is null, there is not even local disorder; the *natura medicatrix* carries it off at once, and here, indeed, we see the influence of the resistance of life, since this micro-organism, the virulence of which is null, multiplies itself.

A little further and we touch the principle of vaccination. When the fowls have been rendered sufficiently ill by the attenuated virus which the vital resistance has arrested in its development, they will, when inoculated with virulent virus, suffer no evil effects or only effects of a

passing character. In fact, they no longer die from the mortal virus, and for a time sufficiently long, which in some cases may exceed a year, chicken-cholera can not touch them, especially under the ordinary conditions of contagion which exist in fowl-houses. At this critical point of manipulation—that is to say, in this interval of time which we have placed between two cultures, and which causes the attenuation—what occurs? I shall show you that in this interval the agent which intervenes is the oxygen of the air. Nothing more easily admits of proof. Let us produce a culture in a tube containing very little air, and close this tube with an enameller's lamp. The micro-organism in developing itself will speedily take all the oxygen of the tube and of the liquid, after which it will be perfectly free from contact with oxygen. In this case it does not appear that the micro-organism becomes appreciably attenuated even after a great lapse of time. The oxygen of the air, then, would seem to be a possible modifying agent of the virulence of the micro-organism of chicken-cholera; that is to say, it may modify more or less the facility of its development in the body of animals. May we not be here in presence of a general law applicable to all kinds of virus? What benefits may not be the result? We may hope to discover in this way the vaccine in all virulent diseases; and what is more natural than to begin our investigation of the vaccine of what we in France call *charbon*, what you in England call splenic fever, and what in Russia is known as the Siberian pest, and in Germany as the *milzbrand*.

In this new investigation I have had the assistance of two devoted young *savants*, MM. Chamberlain and Roux. At the outset we were met by a difficulty. Among the inferior organisms all do not resolve themselves into those corpuscle-germs which I was the first to point out as one of the forms of their possible development. Many infectious micro-organisms do not resolve themselves in their cultures into corpuscle-germs. Such is equally the case with beer-yeast, which we do not see develop itself usually in breweries, for instance, except by a sort of fissiparous production. One cell makes two or more which form themselves in wreathes; the cells become detached, and the process recommences. In these cells real germs are not usually seen. The micro-organism of chicken-cholera and many others behave in this way, so much so

that the cultures of this micro-organism, although they may last for months without losing their power of fresh cultivation, perish finally like beer-yeast which has exhausted all its aliments. The anthracoid micro-organism in artificial cultures behaves very differently. In the blood of animals, as in cultures, it is found in translucid filaments more or less segmented. This blood or these cultures freely exposed to air, instead of continuing according to the first mode of generation, show at the end of forty-eight hours corpuscle-germs distributed in series more or less regular along the filaments. All around these corpuscles matter is absorbed, as I have represented it formerly in one of the plates of my work on the diseases of silkworms. Little by little all connection between them disappears, and presently they are reduced to nothing more than germ-dust. If you make these corpuscles germinate, the new culture reproduces the virulence peculiar to the thready form which has produced these corpuscles, and this result is seen even after a long exposure of these germs to contact with air. Recently we discovered them in pits in which animals dead of splenic fever had been buried for twelve years, and their culture was as virulent as that from the blood of an animal recently dead.

Here I regret extremely to be obliged to shorten my remarks. I should have had much pleasure in demonstrating that the anthracoid germs in the earth of pits in which animals have been buried are brought to the surface by earthworms, and that in this fact we may find the whole etiology of disease, inasmuch as the animals swallow these germs with their food.

A great difficulty presents itself when we attempt to apply our method of attenuation by the oxygen of the air to the anthracoid micro-organisms. The virulence establishing itself very quickly, often after four-and-twenty hours in an anthracoid germ which escapes the action of the air, it was impossible to think of discovering the vaccine of splenic fever in the conditions which had yielded that of chicken-cholera. But was there, after all, reason to be discouraged? Certainly not. In fact, if you observe closely, you will find that there is no real difference between the mode of the generation of the anthracoid germ by fission and that of chicken-cholera. We had, therefore, reason to hope that we might overcome the difficulty

which stopped us by endeavoring to prevent the anthracoid micro-organism from producing corpuscle-germs, and to keep it in this condition in contact with oxygen for days and weeks and months. The experiment fortunately succeeded. In the ineffective (*neutre*) *bouillon de poule* the anthracoid micro-organism is no longer cultivable at 45° C. Its culture, however, is easy at 42° or 43° C., but in these conditions the micro organism yields no spores. Consequently it is possible to maintain in contact with the pure air at 42° or 43°, a mycelian culture of bacteridia entirely free of germs. Then appear the very remarkable results which follow. In a month or six weeks the culture dies; that is to say, if one impregnates with it fresh *bouillon*, the latter is comparatively sterile. Up till that time life exists in the vase exposed to air and heat. If we examine the virulence of the culture at the end of two days, four days, six days, eight days, etc., it will be found that long before the death of the culture the micro-organism has lost all virulence, although still cultivable. Before this period it is found that the culture presents a series of attenuated virulences. Every thing is similar to what happens in respect to the micro-organism in chicken-cholera. Besides, each of these conditions of attenuated virulence may be reproduced by culture. In fact, since the *charbon* does not recur a second time (*ne recidive pas*), each of our attenuated anthracoid micro-organisms constitutes for the superior micro-organism a vaccine—that is to say, a virus capable of producing a milder disease.

Here then we have a method of preparing the vaccine of splenic fever. You will see presently the practical importance of this result. But what interests us more particularly, is to observe that we have here a proof that we are in possession of a general method of preparing virus vaccine based upon the action of the oxygen and the air —that is to say, of a cosmic force existing every where on the surface of the globe. I regret to be unable from want of time to show you that all these attenuated forms of virus may very easily, by a physiological artifice, be made to recover their original maximum virulence. The method I have just explained of obtaining the vaccine of splenic fever was no sooner made known than it was very extensively employed to prevent the splenic affection. In France, we lose every year, by splenic fever, animals of the value of twenty million francs. I was asked to give

a public demonstration of the results already mentioned. This experiment I may relate in a few words: Fifty sheep were placed at my disposition, of which twenty-five were vaccinated. A fortnight afterward the fifty sheep were inoculated with the most virulent anthracoid micro-organism. The twenty-five inoculated sheep resisted the infection; the twenty-five non-inoculated died of splenic fever within fifty hours. Since that time my energies have been taxed to meet the demand of farmers for supplies of this matter. In the space of fifteen days we have inoculated in the department surrounding Paris more than twenty thousand sheep and a large number of cattle and horses.

If I were not pressed for time I should bring to your notice two other kinds of virus attenuated by similar means. These experiments will be communicated by-and-by to the public.

I can not conclude, gentlemen, without expressing the great pleasure I feel at the thought that it is as a member of an International Medical Congress assembled in England that I make known the most recent results of vaccination upon a disease more terrible, perhaps, for domestic animals than smallpox is for man. I have given to vaccination an extension which science, I hope, will accept as a homage paid to the merit, and to the immense services rendered by one of the greatest men of England, Jenner. What a pleasure for me to do honor to this immortal name in this noble and hospitable city of London.

The Subcutaneous Injection of Mercury.

THE advantages of the hypodermic method of using medicines did not remain long limited to the use of morphia. By it a new field of therapeutic resource and research was opened, which the pioneers of the profession were not slow to explore and cultivate. Among the drugs thus tested was mercury, mostly in the form of the corrosive sublimate. There were many reasons why it was especially desirable to utilize this method in the treatment of syphilis, a disease whose visible presence carries with it more of disgrace and humiliation than any other, and whose ravages are often so terrific in their rapidity and destructiveness that time is an all-important

factor in its therapeutics. It is not our intention to review the literature of this subject; suffice it to say that, whilst the advantages of the hypodermic administration of mercury were generally appreciated, and the very great desirability of finding a form of solution which would be free from the extremely irritating effects always hitherto observed, acknowledged, the extreme pain caused by the injection, together with the frequency of abscesses and ugly resultant cicatrices led to its invariable abandonment.

The subject has lately been brought forward again in France, in such a manner as to attract fresh notice and interest. In the seance of the Societe des Hospitaux of Paris, of July 8th and 22nd, M. Mauriceau gave the results of his experience in the use of a new form of mercury—the *peptonate*, or rather *mercurial peptone*—as he terms it. The fact that mercury is absorbed in the state of *albuminate* had already suggested the addition of white of egg to the solution in the hope of thus facilitating its absorption, but with better but still unsatisfactory results. Then Bamberger proposed the substitution of peptone for the albumen; acting upon this suggestion, M. Mauriceau has had prepared a solution which he has employed with the results to be noted, and which is composed as follows: ℞. Bichloride of mercury, gr. 150, Catillon's dry peptone, chloride of ammonium (pure), of each, gr. 225, glycerine and water, q. s. He began by injecting *m* xv of this solution, containing gr. $\frac{1}{30}$ of the sublimate, every third day. No ill effects being observed, the dose was increased to $\frac{1}{15}$, and finally to $\frac{1}{9}$ and the injections were given daily. The solution which he was employing at the last report contained gr. $\frac{1}{8}$ to $\frac{1}{9}$ to every fifteen minims. The result of this treatment in M. Mauriceau's hands, deduced from an experience of 1,900 injections, was most striking. There had been, he states, no local accident, nor abscess, nor induration, nor had salivation ever been produced. In the great majority of cases there had been no pain; in two or three only had there been a burning sensation, not severe, but lasting for several hours, and in five or six others a slight smarting was experienced, never of more than an hour's duration. These unpleasant sensations have become manifest after the first two or three injections, but have not persisted after the fourth. The seat of election with M. Mauriceau for the administration of the mercurial

in this form, is the back between the scapulæ or in the lumbar region, on account of the cellular tissue there being loose and abundant. He insists that the needle should be sharp, and that it should enter deeply into the tissues.

The mercurial thus administered appeared to M. M. to act more promptly and with more effect than when introduced by the stomach, and to be especially applicable to very grave cases, with threatening symptoms, where it is necessary to produce prompt and decided action. The procedure recommends itself moreover by the ease with which it is employed, and by the absence of pain and other bad consequences. M. Mauriceau proposes to continue his experiments, and increase still further the dose of the sublimate. Making all allowance for M. Mauriceau's enthusiasm and prejudice in favor of a method of which he is himself the advocate, the results are too remarkable not to excite our deep interest. Whilst unwilling to accept all that M. Mauriceau has said, therefore, until confirmed by the experience and testimony of others, we can not ignore the statement of any credible witness as remarkable as these. Who can say of the subcutaneous injection of morphia, which we use habitually and without hesitation, that he has administered it 1,900 times without once producing an abscess, induration or scar, and in only a very small minority of cases, with only a burning or smarting pain of no great severity?

In this connection it is of interest to learn that Lewin, of Berlin, is also popularizing this method in Germany, especially in hospital practice. We may add that there seems no good reason for limiting it to hospitals any more than in the similar use of other drugs. Wherever the patient is willing to submit to it and can be seen daily it may be resorted to.—*Md. Med. Jour.*

International Medical Congress and Sir James Paget.

The grand spectacle of the assemblage of over three thousand of the world's greatest physicians in the world's greatest city, from the 3d to the 9th of August, was the cynosure of all eyes. Unquestionably, it had no parallel in the annals of our ancient calling. The representative medical men of all civilized nations were there—Virchow,

Pasteur, Flint, Paget, Esmarch, Charcot, Billings, Jenner, and a great many more of those who give us our literature, who adorn and elevate our profession, and to whom we are accustomed to look up for counsel and instruction. The meeting was inaugurated in St. James Hall, London, with great formality by the Prince of Wales, in the presence of the Crown Prince of Germany. Then came that grand, eloquent, perfect address of the President, Sir James Paget, spoken, as we learn, from beginning to end without once hesitating or once referring to notes. Few men combine in themselves so many of those qualities, which excite our admiration and win our affections, as Sir James Paget. A scholar, orator, philosopher—his mind seems to be always at an equipoise, that *medias res* of safety. There is none of the stoic in his nature, but alive to every thrill that moves the chords of human feeling, he illustrates well the sentiment of those oft-quoted lines of Terence: "*Homo sum: humani nihil a me alienum puto.*"

He carries with him our sympathy, because we feel that he is one of us, and is pleading the cause of humanity, not of self. What a grand sight to behold one crowned with age, and still not incapable of the enthusiasm of youth or indifferent to the progress of science. May his closing words long linger in our memories, and be the motive of our lives and conduct: "Let us then resolve to devote ourselves to the promotion of the whole science, art and charity of medicine. Let this resolve be to us as a vow of brotherhood, and may God help us in our work."—*Md. Med. Jour.*

The International Medical Congress.

Section on Mental Diseases.

If the subjects brought forward may be taken as indicative of the current lines of observation in this specialty, it becomes interesting to compare the number of the pathological and clinical investigations with the almost entire absence of those of a therapeutic or preventive character.

The importance of this specialty was dwelt on by Dr. Lockhart Robertson in his opening address in the statement that there are in England alone 71,000 persons whom

the law recognizes as of unsound mind, being one in 350 of the population. These figures would appear to be a strong plea in support of Dr. Clouston's advocacy, in a very able paper, for the extension of the teaching of mental diseases to students of medicine.

In the animated discussion on this paper, the consensus of opinion pointed to the necessity for a greater use of the county asylums for the purpose of instruction; that in this way only could opportunities be afforded to every student to enable each to obtain such an acquaintance with insanity as would prepare him to answer a question on this subject at his examination by the licensing bodies; and that a special course of study should be demanded of all medical men who were empowered to sign certificates of insanity.

Dr. Bucknill, in his paper on "Testamentary Incapacity," specially discussed the recent decision in Banks *vs.* Goodfellow, wherein the Court of Queen's Bench found a person capable of making a will who was admittedly the subject of delusions of suspicion and persecution.

Dr. Maudsley pointed out that this was a sequence of similar American decisions, and commended the recognition of the ability of some cases of hallucinatory insanity to execute a will. In this opinion he was supported by Drs. Wood and Orange.

Dr. Motet, of Paris, alluded to the difficulty of deciding this question in cases of coarse brain disease with mental enfeeblement, and Dr. Bucknill quoted the case of a patient in a private asylum, who had lately, under his advice, executed a will with appropriate legal precautions.

The subject of Hypnotism was introduced by Professor Tamburini, who has, without doubt, taken the truly scientific method of examining in the most exhaustive manner the condition of the circulation, respiration and muscular irritability, as well as the reactions of the senses during the hypnotic state. By this method only can deception and imposition be eliminated from this matter, and the subject brought to have a definite scientific value.

Dr. A. Foville, in an interesting paper on "Megalomania," established two forms of exalted delusion; the first, fleeting, inconsistent and generalized, occurring in general paralysis, transiently in mania, in organic brain disease, and in alcoholism—in all these conditions being probably related to hyperæmia of the cortex of the brain. The

second variety is systematic and permanent, chronic in evolution and incurable; usually associated with hallucinations, with delusions of persecution and exalted change of personality; and being especially associated with illegitimacy.

Professor Tamburini, in his paper entitled "Cerebral Localization and Hallucinations," stated that Panizza, in 1856, recognized the existence of a sensory center (of sight) in the cortex cerebri, but that the full development of the discovery was due to Ferrier. He endeavored to prove that hallucinations are caused by disease of the sensory cortical centers.

Dr. Ferrier, in alluding to the distinct regions of special sense in the cortex cerebri, proved by his experiments before the present Congress, suggested that hallucinations should be regarded as sensory convulsions, analogous to those occurring in motor centers.

Dr. Alex. Robertson, in his communication on unilateral hallucinations, relegated their origin to the sensory centers, which, however, he did not at present consider to be satisfactorily mapped out.

Dr. Fournier attempted to prove that hallucinations differed only from ordinary acts of memory in being involuntary and unconsciously originated. An abnormal stimulus thus arising in the cortex was transmitted to the optic thalami, and by re-awaking of the activity of these organs gave rise to a false impression.

This theory met with very general opposition.

Dr. Fournier suggested the classification of hallucinations into those connected with: (1) the sensations of organic life; (2) the sensations connected with reproduction; (3) the sensations of the special senses; (4) the sensations produced by the voluntary activity of our organs, as by speech.

Dr. Motet's paper on Moral Traumatism in the Alcoholic had a medico-legal as well as a clinical interest in directing attention to the possible development of transient mania (not of the type of delirium tremens, but more nearly resembling the maniacal outbreaks after epilepsy) as a result of mental shock in a person of alcoholic habits.

Mental stupor was discussed in a valuable paper from Dr. Hack Tuke. He described three cases in which this condition was associated with catalepsy, and expressed the opinion that on a close examination most of these cases

would be found to be due to melancholic absorption, and that in comparatively few was the mind an utter blank. He proposed to abolish the use of the term, "acute dementia," using the term "mental stupor" instead, and adding the words "with melancholia," when this was associated.

Dr. Foville alluded to the fact that the term "acute dementia" was no longer used in France, and that only one condition was recognized. On the other hand, it was urged that there was a distinct difference between anergic stupor and stupor with melancholia, although in some cases the distinction was difficult, owing to the conditions closely approximating in the later stages of disorder.

Epilepsy was the subject of a demonstration by Dr. Lasegue, who described true epilepsy as being due to malformation of the skull, either idiopathic or traumatic; all other forms as being spurious or epileptoid—*i. e.*, those due to cerebral traumatism, organic lesion and toxic or hysteric conditions. The true epilepsy (excluding the traumatic) dependent on malformation of the skull, follows only on its ossification, and invariably develops between the ages of fourteen and eighteen years. The head is found, on examination and measurement, to be asymmetrical, either laterally or antero-posteriorly, and this is accompanied by asymmetry of the face, the mouth especially being askew (strabismus buccalis). This form is never hereditary, nor is it transmissible to offspring. The first attack of epilepsy is identical in character with all succeeding attacks, therein differing markedly from the epileptoid forms. The attacks of epilepsy occur between four and seven A. M., during the passage from the sleeping to the waking state. These patients are epileptics in everything. Dr. Motet stated that Dr. Lasegue's views were generally accepted in Paris, but no discussion in confirmation or opposition followed.

The relations of insanity to Paralysis Agitans was treated by Dr. Ball, to Exophthalmic Goitre by Dr. Savage, and to Gout by Dr. Rayner.

From Dr. Ball's paper and the discussion thereon, in which several additional cases were quoted, the conclusion may be drawn that insanity with paralysis agitans is more common than the limited number of recorded cases would appear to indicate; Dr. Mercier expressing the opinion

that the mental defect, being negative, was often overlooked.

Exophthalmic goitre was associated with insanity in three cases reported by Dr. Savage, who draws attention to the fact that symptoms of this disease may occur in general paralysis of the insane, and gave a case in which this diseased state recurred during attacks of mental disorder, being absent in the intervals, this case being markedly improved by hoscyamine.

Dr. Rayner quoted cases of insanity from retrocedent and latent gout, with others in which it was only an associated cause. The importance of the recognition of its presence with regard to prognosis and treatment was dwelt on, and a parallel drawn with the insanity resulting from lead and alcoholic blood-poisoning.

Dr. Savage has rendered good service to pathology in drawing attention to changes produced in nervous tissues prepared for microscopic section by hardening in spirit. These changes, he showed, are not to be distinguished from the so called miliary degeneration. He also exhibited microscopic sections containing colloid and amyloid bodies, which were probably due to the mode of preparation. Dr. Benedikt expressed the opinion that the miliary bodies were normal, and not pathological. Dr. Holler, of Vienna, communicated a paper on a Method of Preparing Large Sections of human brains, of which he exhibited specimens. The process is a development of Sankey's method, large slices being stained in carmine-ammonia, placed in Canada balsam, dried on object glasses, and pared with tenotomy knives to the required thinness. These sections would be useful for anatomical purposes, but for histological and pathological observation it may be objected that they do not take a uniform plane.

Dr. Benedikt exhibited a series of fifty brains of criminals, in which he discovered, as a marked characteristic, a general coalescence of the typical fissures. This deviation from the normal type he termed "atypic," the same condition being present in hereditary insanity, epilepsy and other low types of the human brain. Dr. Shuttleworth gave an interesting *resume* of the cranial characteristics of idiocy, and Dr. Fletcher Beach exhibited brains of cretinoid and microcephalic cases, pointing out the close relation between the mental characteristics and the development of the convolutions. He quoted the observa-

tion he had made in common with Dr. Hilton Fagge, in cretinoid idiocy, that the thyroid body was absent, and was apparently supplemented by fatty growths in the posterior triangles of the neck. His microscopical sections showed the defect of processes in the motor cells of the brains of idiots.

A Study of Fever.

BY JOHN H. LOWMAN, A. M., M. D., CLEVELAND, O.

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In discussing a perverted physiological process, questions of pathology and etiology are so commingled that the actual state is often lost sight of. In the consideration of fever this confusion is especially noticeable. The discussion generally takes an etiological, pathological or therapeutical tack, so that a clear demonstration of what fever is in its essence does not appear. Much useless discussion and apparent difference of opinion result from this fact. Constantly as we use the term fever, a clear conception of that term is by no means as constant. Theories of the pathology and treatment will bend to the author's idea of the existing state. He who defines fever to be a disturbance dependent on a special anatomical lesion, and assumes that in an unannounced premise, can not converse clearly with one whose definition of fever is, a disturbance of the vaso-motor system. The discussion of apyretics to-day pre-supposes a mutual understanding of pyrexia. The confused state of medical opinion on this subject has prompted my presenting it at this time.

What, then, is fever? It has been defined as a form of inflammation; and inflammation is defined as an exaggerated or perverted nutrition. Again it is defined as an excessive activity, or less definitely, as an excessive disturbance of every function. There is nothing here that satisfies. It is necessary, therefore, for us to analyze fever as best we may, and fix on that condition that most frequently, or indeed constantly, prevails as the disturbance in the body that materializes our term. In fever there is disturbance of the glands, the cardiac apparatus, respiratory apparatus, the vaso-motor system, and the thermic func-

tion. Of these five conditions, the most prominent one is disturbance of the thermic function. Not only will all the others be found to depend on this, but in many cases where the phenomenon of fever exists, some of them may not be found. All varieties of glandular disturbance may be present in fever, and as far as we can detect there may be no disturbance at all. Every form of cardiac action may prevail, from rapid weak or rapid strong beat to the reverse; the respiratory apparatus may be acting normally; the vaso-motor system, as gauged by the blood pressure within the arteries by the cardiometer, may be normal, or in paroxysm, or in paralysis; but we never speak of fever unless there is a high temperature in the body, and this, we necessarily conclude, must be independent of the other conditions above mentioned. That a high temperature will produce all the disturbance just mentioned is easily proven. If an animal be placed in a closed box and the air in the box be gradually raised to a temperature several degrees above the heat normal to the animal, the animal heat, as indicated by the thermometer, will gradually increase. Subsequently there will be disturbances of the heart, similar to those seen in fever. The heart beat, at first strong and rapid, gets weaker with the increasing heat, and finally becomes imperceptible. The respiratory action follows that of the heart. When the heat becomes great, the cerebrum is affected. There is at first stupidity, then delirium and even convulsions, changing to coma and death. The ever-prevailing sequence observed in these experiments is evidence that heat is the cause. When the animal is removed from the box and douched with cold water, he will soon revive, if coma has not been too profound.

Dr. H. C. Wood's experiments, imitating insolation, also prove heat to be a cause of these disturbances. He fastened bladders to the heads of animals over the cerebrum, and kept the bladders filled with hot water. In this way the brains of the animals were heated without materially affecting the rest of the body. A condition resembling insolation was developed, sometimes gradually, sometimes suddenly. The stupor would gradually deepen into profound coma and death. If, however, the hot cap were removed and a stream of cold water poured on the head before the animal was *in articulo mortis*, it would revive and be apparently fully recovered in a short time. This

was tried on animals somewhat exsanguinated so that it could not be attributed to congestion of the brain. After death in these cases, the heat of the brain, as estimated by plunging in a thermometer, was in a cat, 108°, in a rabbit, 111°—about the temperature attained by prolonged exposure in the sun's rays.

T. Lauder Brunton has experimented with heat on the hearts of cold-blooded animals. It is well known that the hearts of these animals will beat for a long time after they are removed from the body. To the isolated heart of a frog, Dr. Brunton applied heat and found that the pulsations became more rapid until a limit of tolerance was reached, and then the pulsations ceased.

In these experiments there is no doubt whatever that the heat was the direct cause of the disturbance, and the disturbances observed are similar to those we find accompanying hyperexia in man. Furthermore, reasoning from therapeutics, there are some severe fevers that are relieved by simple abstraction of heat; *e. g.*, insolation and rheumatic cerebritis. In these diseases, when the temperature is 108° and coma is threatening, simple abstraction of heat until the temperature is 102° revives the patient. There can thus be no question but that heat is the agent that produces these changes, and the therapeutic end is best obtained by abstracting it.

Simple increase in the animal heat is not fever. The animal in the hot box suffers from heat, but may have no fever. So the artificially insolated animals suffer from heat but may have no fever. A man after severe muscular exercise has more than his usual quota of heat, and eliminates carbonic acid and urea in excess, but is not feverish. In all these cases the standard of temperature is preserved, and as soon as the extraneous circumstances are removed, is soon regained, though an increment of heat may have been temporarily added. The standard of temperature of man is 98⅖°; in some birds, 113°. Should the individual be chilled by a cold blast, the thermometer might record a lower degree for a time, but the standard would soon be regained by an increase in the production of heat in the body. Should the surrounding atmosphere be excessively heated, or the individual exercise actively, the registration of heat might be higher than the standard, but would soon fall to the normal through a diminished production or an increase of loss. Thus there are varia-

tions from the standard that are consistent with health but they are only temporary, and are limited.

By fever is meant a permanent elevation in the standard of temperature. In a man with fever this standard may be 104°. If he is temporarily chilled by a cold wind the thermometer may fall a degree or so, but soon returns to 104°. If he exercises freely, it may rise a degree or so, but soon returns to 104°. These changes are consistent with the new standard, 104°, just as the variations in health are consistent with the standard $98\frac{3}{5}$°. We might say that a new individual is developed whose normal temperature is 104°. When pyogenous material (speaking according to Hueter) is in a man, his normal temperature is greater than his former temperature. To this paleological being, the normal temperature must be $98\frac{3}{5}$ + X; X being more or less according to the grade of the fever. As Dr. Stokes expresses it, the individual has entered upon a new and special phase of existence. Yet he does not define the fever, but says "it is more easy to say what it is not than what it is." In consequence of taking no well-defined position as to what fever is, this author, usually so clear, becomes at times confusing; *e. g.*, when he makes the eruption in variola the result of fever, whereas it must be due to a special poison acting synchronously with the fever. He also holds syphilis to be a form of fever—a position now totally untenable.

A standard of temperature is maintained by a balancing of the heat-producing and heat-abstracting processes. They vary in activity, and have wide limitations consistent with health. Heat is lost to the body by radiation from the surface, conduction, expired air and excreta. The amount lost in a given time is difficult to determine, but it is estimated by Dr. Draper that enough is lost every hour to raise, if retained, the temperature of the body in that time 2.2° C., or 3.9° F. If all the heat lost in twenty-four hours were retained, and the heat production should progress at its usual rate, the temperature of the body would be doubled. If, however, heat is retained in the body, production diminishes; if lost in increased quantities, it is produced excessively. The amount of heat lost in a certain time may be estimated by the cold water bath. Thus, Dr. Draper found that a man weighing 180 pounds, resting in a bath of 472 pounds of water for one hour, would raise the temperature of the water 1.11° C.

The amount of heat necessary to raise 472 pounds of water 1.11° C. in one hour, would represent the amount of heat lost normally by the body in the same time. The amount of heat necessary to raise 472 pounds of water 1° C. would be twice the quantity necessary to raise 236 pounds 1°.—*Ohio Med. Jour.*

Intussusception—Recovery.

(To the Editor of the Canada *Lancet.*)

Sir:—On Saturday, September 4, I was called to see a case which appeared to puzzle the attending physician beyond measure. I found upon my arrival a young man aet. 19 in dorsal decubitus, with knees drawn up and complaining of nausea and pain over the abdomen, which was most severe in the ileo-cæcal region. On questioning I learned that no movement of the bowels had taken place for two days previous, although there had been a discharge of blood and mucus. There was great tympanites present, but pressure did not intensify the pain as I expected it would. The pulse was 110, and the temperature nearly normal, and spontaneous vomiting of a brown fluid, having a slightly fæcal odor, now occurred. The thirst was intense, but when fluids were swallowed, they were immediately ejected. I ordered ice with better effect, as the vomiting did not occur again. I diagnosed the case to be intussusception; the attending physician coinciding with my opinion. From the symptoms present I resolved to try injections of warm water and turpentine every two hours, and this failing obtain competent surgical aid and perform laparotomy. Next day I again visited the case and was pleasantly surprised to find a marked improvement, the tympanites reduced and gases with an offensive odor escaping although no movement of the bowels had taken place, but he as had not eaten solids for three days this did not cause any fresh alarm. I left the house with directions to continue the injections as before and report to me next day the progress made during the night, when I was still further surprised to hear of marked improvement in every particular, and food was retained. I have not seen him since, but keep myself informed each day, and the movement of the bowels is normal. No abdominal tumor could be discovered owing to the excessive

tympanites that existed when I first saw the case. My object in reporting this case is simply to show that surgical interference is not always necessary or justifiable, but had my experience as a surgeon been such that I could have operated myself, I would undoubtedly have done so, and distance from competent aid led me to try the above alternative. Hoping that you may consider this worthy a place in your valuable journal,

I remain yours respectfully,

T. R. HOSSIE, M. D.

Gouverneur, N. Y., Sept. 10, 1881.

Surgico-Anatomical Study of the Gunshot Wound of President Garfield.

BY FANEUIL D. WEISSE, M. D.,

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AFTER the autopsy on the remains of the late President, performed September 20, 1881, the following seemed to have been the course of the fatal ball after it entered the President's body, and the same was verified by actual dissections:

The ball entered opposite the tenth intercostal space, about four inches to the right of the median line of the back. It ranged in a direction forward and downward, inclining a little from right to left. It perforated to the plane of the ribs through the skin, subcutaneous tissue, fascia, the latissimus dorsi, seratus posticus inferior, and sacro-lumbalus muscles. It impinged upon the eleventh rib (the most movable of all the ribs), which it crowded to a plane anterior to that of the twelfth. It produced a comminuted fracture of the eleventh rib. The impact of the ball on the eleventh rib caused it to turn on its axis, and from there it was deflected to the left. It perforated the eleventh external intercostal muscle and the sub-pleural portion of the diaphragm just above the right ligamentum arcuatum externum. It tracked through the connective and adipose tissue between the superior portion of the right kidney and the twelfth rib to the spinal column. It pierced the attachment of the right psoas magnus muscle to the first lumbar vertebra. It entered the body of the first lumbar vertebra from right to left. It emerged from the left of the spine, pierced the left psoas magnus muscle attachment, and entered a plane of connective and adipose tissue between the left kidney posteriorly and the left half of the pancreas anteriorly. It crossed the posterior surface of

the pancreas obliquely to the left and from above downward to its point of lodgment. It wounded the splenic artery in its transit across the pancreas (the splenic artery presenting in the track of the ball, it seemed more than probable that it, and not the mesenteric, would prove, upon a careful dissection, to have been the injured vessel), from which source the final hemorrhage occurred which burst into the peritoneal cavity.

I visited Washington with Dr. Geo. F. Shrady, upon the invitation of Dr. D. W. Bliss. At that time Dr. Shrady was informed of the above theory and dissections, but Dr. Bliss knew nothing of these anatomical investigations. Dr. Bliss related to Dr. Shrady and myself a detailed history of the President's case from July 2d to the time of his death. The pathological specimens taken from the body were placed at our disposal by Surgeon J. J. Woodward, U. S. A., in charge of the Army Medical Museum (where the specimens are), and we studied them carefully. Drs. Woodward and Lamb had made careful dissections of the pathological specimens, by which were revealed the following conditions, which lack of time had rendered impossible to have been known at the time of the issue of the Elberon autopsy bulletin:

First.—The existence of a united fracture of the right twelfth rib.

Second.—The entrance of the ball at the right side of the intervertebral fibro-cartilage, between the twelfth dorsal and the first lumbar vertebræ, involving the adjoining portion of the body of the first lumbar vertebra, anterior to the right intervertebral foramen, between the pedicles of the twelfth dorsal and the first lumbar vertebræ.

Third.—The transit of the ball through the superior half of the body of the first lumber vertebra, from right to left and obliquely forward and downward, producing a comminuted fracture of the body of the vertebra.

Fourth.—That the intervertebral fibro-cartilage between the first and second lumbar vertebræ had been injured, by the comminution of the body of the vertebra contiguous to it.

Fifth.—That the left anterior inferior edge of the body of the twelfth dorsal vertebra was broken away.

Sixth.—The evidences of a traumatic aneurism in communication with the splenic artery, at about two and one-half inches from its origin from the cœliac axis.

Seventh.—The cyst which contained the ball was found

at the inferior border of the external left third of the pancreas posterior to the peritoneum, viz., the posterior inferior layer of the lesser omentum, which becomes the anterior superior layer of the transverse meso-colon.

Eighth.—The imperviousness of the track of the ball for an inch or more from the cyst.

The specimen of the abdominal viscera did not present anything bearing upon the location of the collection of pus to the right of the vertebral column described in the Elberon autopsy bulletin.

Reviewing the theory previously deduced, with these additional facts, there was found only this to add:

In that portion of its course after deflection from the eleventh rib to the spine, the ball grazed the anterior surface of the twelfth rib, producing a simple fracture of it.

The transit of the ball through the spine had been defined, but remained virtually the same.

The injuries inflicted by the ball may be epitomized as follows:

First.—A compound comminuted fracture of the eleventh rib.

Second.—A compound fracture of the twelfth rib.

Third.—A compound comminuted fracture of the body of the first lumbar vertebra, complicated with injury to the intervertebral fibro-cartilages above and below that vertebra, and the breaking off of the border of the twelfth dorsal vertebra.

Fourth.—A wound of the splenic artery.

The anatomical reasons for the sequelæ of the above injuries are:

Sequelæ of the first injury.—The compound comminuted fracture of the eleventh rib developed the superficial abscess opened by the first operation; the debris of the comminuted rib—thrown by the deflection of the ball downward into the substance of the muscles of the parieties—was the direct cause of irritation, etc.

Sequelæ of the third injury.—The concussion to the spinal column had its expression in the symmetrical pains at the peripheral distributions of the right and left sacral plexuses, below the knees, indicating disturbances of their contributive spinal nerves, which constitute the major portion of the cauda quina within the lumbar region of the column.

The pain in the right inguinal region and of the right

side of the scrotum would find its explanation in a special impression upon the right first lumbar nerve—the anterior branches of which are the right ilio-hypogastric and ilio-inguinal nerves distributing thereto—which is in close relation with the first lumbar vertebra.

The comminuted fracture of the lumbar vertebra, the injury to the twelfth dorsal, and the injured intervertebral fibro-cartilages determined a consecutive destructive inflammation, the pus from which drained to the right. The pus, however, did not altogether follow the track of the ball posterior to the right kidney; some of it passed anterior to the right kidney, dissecting its way posterior to the peritoneum.

The pus, taking the posterior course, dissected its way down in the post-visceral and extra-peritoneal (sub-serous) areolar tissue, interior to the transversalis fascia of the abdominal parietes, the process ultimately resulting in the sinus, which extended to the iliac fossa.

The pus, taking the anterior course, did not have an outlet, and a reservoir of it accumulated between the right kidney posteriorly and the peritoneum covering the liver and the colon anteriorly.

The contiguity of this pus to the liver and colon induced a protecting localized adhesion of the opposed peritoneal surfaces, investing the liver on the one hand, and the hepatic flexure and right half of the transverse colon on the other. These conditions were verified at the autopsy. "An abscess-cavity, six inches by four in dimensions, was found in the vicinity of the gall-bladder, between the liver and the transverse colon, which were strongly adherent. It did not involve the substance of the liver, and no communication was found between it and the wound." It is possible that there was an error as to the location of this pus; in exposing the abscess *in situ* the adhesions between the liver and colon were progressively separated, and the collection of pus—really behind the posterior plane of the peritoneum, in the right lumbar region—as it bulged forward, gave the semblance of lodgment between the liver and colon.

Sequelæ of the fourth injury.—The injury to the splenic artery developed a traumatic aneurism, as appeared in the dissected specimen. The location was such that it obstructed the track of the ball to the left side of the spine, in which position it determined two reparative processes:

1st. The obliteration of the track of the ball to the left of the first lumbar vertebra, which prevented the drainage of pus in that direction. 2d. The lodged ball, sealed hermetically from access of air by the closure of its track, became at once encysted.

The surgical anatomy of this memorable case of gunshot wound admits of the following conclusions:

First.—It is a matter of great regret that the autopsy was not made from the back instead of the anterior plane of the body. The bullet entered from behind, and from this direction it should have been followed; after which the internal organs could have been examined for evidences of any remote effects of the wound. Dissections demonstrate, conclusively the advantages, in this particular case, of such a course, as it would have exposed the lesions and the encysted ball *in situ*.

Second.—The impossibility at any time to have safely or even successfully probed the wound so as to find the ball.

Third.—The ball as lodged was shut in beneath the abdominal parietes and kidney posteriorly, and the abdominal parietes and spleen laterally and to the left. In this location no operation was warranted for its removal, there having been no evidence of its presence there.

Fourth.—Had the point of lodgment of the ball been known, the fact of its not producing any local irritation—the formation of an abscess around it—would have been a positive contra-indication against any operation looking to its removal.

Fifth—If an abscess had formed around the ball instead of its becoming encysted, the pus might have burst into the peritoneal cavity, or pointed in the left loin below the kidney, and formed a similar post-visceral and extra-peritoneal sinus to the one that existed on the right side.

The rupture into the peritoneal cavity would probably have been provided against by the occurrence of suitably protecting peritoneal adhesions. Had the sinus formed, it would have afforded a clue to a correct diagnosis; and under these conditions, after an incision had been made to allow the escape of pus at the left side, an exploratory operation, with the sinus as a guide to the ball, might have been warranted, even to the determining its positive location, and possibly its extraction. Indeed, the ball itself might have dropped into the left sinus.

Sixth.—It was anatomically possible for a ball deflected downward from the eleventh rib to take the same course as did the sinus to the iliac fossa, and there was afforded—by the rapidity with which this sinus formed; the readiness with which the drainage tubes passed; the fact that the incision of the second operation tapped the sinus below the twelfth rib; the fact that the wound of entrance of the ball healed so promptly after the incisions below; the existence early in the case of a point of tenderness in the right iliac fossa and the subsequent recognizable induration there, which gradually diminished—sufficient grounds to warrant the diagnosis that was arrived at, and maintained up to the time of the death of the patient, especially so in the absence of any evidence that the ball had taken a different course.—Medical Record.

MICROSCOPY.

MICROSCOPICAL APPEARANCES OF STRIPED MUSCLE DURING REST AND CONTRACTION.—D. Waycraft, of Sir Josiah Mason's College, Birmingham, maintains that the fibrils of striped muscle are homogeneous, and that the stripes are entirely owing to alternate convexities and concavities, which with the stripes disappear while the fibrils are stretched and their caliber rendered uniform. He had imitated the stripes of muscles by producing concavities and convexities on a glass rod, immersed in Canada balsam. He maintains that the fibrils are stained uniformly by eosine, but that the thin stripe appears more deeply stained because it occasions convergence of the colored rays.

Dr. Rutherford takes issue and says, that it is impossible to regard the fibrils as homogeneous; for a very diluted solution of eosine, aniline-blue or picrocarmine scarcely stains at all the substance of the clear stripe, while it stains the sarcous elements and globules of Dobie's line deeply.

THE BLOOD.—Recent investigations, such as those conducted by Drs. Cutter and Bradford, of Boston, have established that there is great variation in the number of the globules of an individual, depending on various causes, such as the locality from which the blood is drawn, the loss of fluids, as by diarrhea, sweating, increased urinary secretions, etc., and even the period of the day, week, or year. These general conclusions have also been

sustained by Hayem, of Paris, in researches which are still being prosecuted.

The pigment of the blood occurs usually in an amorphous form, and is called hematine. The brownish red needles found in extravasated blood are known as hematoidine.

Hemoglobin also occurs in most mammalian blood, and is deposited under the form of rhombic plates. According to Montegazza and others, richness in hemoglobin indicates a corresponding richness in red corpuscles, and any special depth of color in the blood may be regarded as implying a certain given number of red corpuscles to the cubic millimetre. While this ratio appears to hold true in health, it fails in disease. Thus, a condition which we recognize as anemia, may be almost wholly due to a loss of hemoglobin in the corpuscles, or an actual loss of red corpuscles, together with a diminished amount of hemoglobin in those that remain. In the cachexia of cancer the number of the corpuscles may be sustained, but their hemoglobin diminished. In diabetes mellitus, on the other hand, there may be an excess of red corpuscles, while there is a diminution of their hemoglobin. In anemia, from hemorrhage, there is an actual loss both of corpuscles and of hemoglobin in those that remain.

In early fetal life all the corpuscles are colorless. According to Balfour and Foster, both colored and colorless corpuscles, at least in the chick, are developed from solid sprouts of protoplasm, derived from the middle germinal layer. There seems good reason, however, to believe that the leucocytes are formed in part, at least, from the lymphatic glands, and Klein thinks that they are thrown off from the "germinating buds" of serous membranes. Later, the red ones make their appearance, and are for a time nucleated. The investigations of Neumann and Bizzozero, showing that the red corpuscles in the medulla of bones are also nucleated, favors the theory that bone-marrow is one of the theaters for such corpuscular metamorphosis.—*Satterthwaite's Manual of Histology.*

Diagnosis of Blood-Stains.

Dr. J. G. Richardson, of Philadelphia, gives the following summary of the results of his measurements of blood-

corpuscles, published in *Gaillard's Medical Journal*, and reprinted in *The Medical Herald*, from which we copy:

First—That in unaltered blood-stains, as ordinarily produced by the sprinkling of drops of blood upon clothing, leather, wood, metal, etc., we can, by tinting with anilin or iodine, distinguish human blood-corpuscles from those of an ox, pig, horse, sheep and goat, whenever the question is narrowed down by the circumstances of the case to these limits.

Second—By the method I have devised we can measure the size of the corpuscles, and apply the two corroborative tests of tincture of guaiacum with ozonized ether and of spectrum analysis, to a single particle of blood-clot weighing less than one fifteen-thousandth part of a grain, a quantity barely visible to the naked eye.

Third—Hence, when an ignorant criminal attempts to explain suspicious blood-spots upon his clothing, weapons, etc., by attributing them to the ox, pig, sheep or goat, or to any of the birds used for food, we can, under favorable circumstances, *absolutely disprove* his false statement, and materially aid the cause of justice by breaking down his lying defense, even if twenty years have elapsed.

Fourth—But, if the accused person ascribes the tell-tale blood to a dog, an elephant, a capybara, or any other animal in Dr. Woodward's list, it is useless to attempt to dispute his story, on microscopical evidence as to the size of the blood-corpuscles.

Fifth—In cases of innocent persons wrongfully accused of murder, and really stained with the blood of an ox, pig, or sheep, testimony of experts, founded upon measurement of the corpuscles, would be valuable, but less conclusive, because, under certain circumstances, human blood-corpuscles may *shrink* to the size of those of the ox, whilst under no known condition do ox or pig corpuscles *expand* to the magnitude of those in human blood.

Sixth—In order to do away with ingenious objections of lawyers that the murdered person may have been affected with some disease which altered the size of his blood disks, or that the articles of clothing, etc., upon which the stains were deposited had produced, chemically or otherwise, some similar change in their magnitudes, it is very important to obtain, promptly, stains from the fresh blood of the victim, made in the presence of wit-

nesses, upon portions of the prisoner's clothing, or weapons analogous to those upon which suspicious red spots are found when he is arrested. When this can not be done, spots of the murdered person's blood, sprinkled on white paper, and fragments of his lungs and kidneys, should be carefully preserved, the former by rapid drying and the latter by preservation in diluted alcohol. These little precautions, which may in any instance, prove to be of infinite importance, should be earnestly impressed upon coroners, district attorneys and policemen, throughout the civilized world.

Protoplasm and Nucleus.

A NUMBER of investigators have lately given their attention to the structure and functions of nuclei, in both animal and vegetable cells. The subject is still very obscure, and there remains considerable difference of opinion as to the relative importance of nuclei. However, the attention that they have received has lately led to many new discoveries. It has been found that many plant-cells, which were supposed to be destitute of nuclei, do possess them—sometimes several in each cell; but it is stated that the Phycochromaceæ have no nuclei. The following summary of the views of F. Schmitz will prove interesting in this connection: The protoplasm of vegetable cells is a reticulated framework of fine fibrillæ. In the youngest cells the peripheral layers of the protoplasm are freely dotted, while toward the middle are homogeneous lacunæ or vacuoles. These increase, both in number and in size, as the cell grows older, frequently coalesce until the protoplasm becomes reduced to a reticulated, parietal utricle, with a number of threads crossing the cell-cavity. Between the meshes there is a homogeneous fluid. The nucleus consists of a matrix in which, after hardening and coloring, a very fine punctation can be recognized, probably due to a reticulate structure. The nucleus must be regarded as a differentiated portion of the protoplasm; its special function appears to be the formation of the proteinaceous substance.

We are not yet prepared to subscribe to all that has been written about the reticulated structure of protoplasm and nuclei, but prefer to wait for more convincing

demonstrations. Mr. C. Fromman not only finds the reticulated structure in the protoplasm in the chlorophyll-grains and in the cell-walls, but he also states that adjoining cells usually communicate by means of openings through which the threads of protoplasm pass. This observation is so utterly at variance with previous experience, that we greatly doubt its accuracy, and regard the statement as very improbable. We are particularly cautious about accepting the conclusions concerning the reticulations since Dr. Lester Curtis, of Chicago, thinks he has conclusively proved that the net-work of blood-cells, which Klein and others have so fully described, has no existence in the living cells. Dr. Curtis' article, to which we allude, has not yet been published.

Book Notices.

Antiseptic Surgery. The Principles, Modes of Application, and Results of the Lister Dressing.—By Dr. Just. Lucas-Championniere, Surgeon to the Hopital Tenon, Member of the Societe De Chirurgie, etc. Translated from the second and completely revised edition, with the special sanction of the author, and edited by Frederick Henry Gerrish, A. M., M. D., Surgeon to the Maine General Hospital, and Professor of Mat. Med. and Therapeutics in Bowdoin College, etc. 8vo. Pp. 239. Portland: Loring, Short & Harman.

Every intelligent physician who takes a medical journal (and no physician can be intelligent who does not take a medical journal) has heard of the Lister method over and over again. As Dr. Gerrish says, it has hardly been possible, for more than a decade, to glance through a medical journal without seeing something concerning it. But while this is true, there are comparatively few medical men in this country who have a sufficiently good knowledge of this modern system of treating wounds to enable them to apply it with essential accuracy. The consequence is that a great many surgeons either do not use it at all, or, when some do attempt to employ it, they so incorrectly apply it that disappointment is the result. Mr. Lister has always insisted that successful results from the use of his antiseptic method will only follow when his plan has been carried out in all of its minute details.

The object of the work, as stated by the translator, is to supply the profession of this country with a low-priced treatise in the English language, from which one can acquire the necessary information with regard to the principles, practice and results of antiseptic surgery. He, therefore, says that he has translated this work that the American physician may experience the benefits of a method which will do more than any other to lead his surgical patients to recovery without delay, danger or discomfort. A careful perusal of the work will show, we think, that the Listerian theory is rational, and its practice wonderfully satisfactory; but also that its application is neither difficult nor seriously expensive.

In Denmark the Lister method is said to reign supreme. In France it has gained a very firm foothold, which it will no doubt maintain. By it wounds unite in the greater part of their extent, and the remainder does not suppurate. Erysipelas, if not altogether unknown, is infinitely rare. Purulent infection, too, seems to have disappeared from the list of wound complications in the services where Listerism is followed. Price, $2.25.

Artificial Anesthesia and Anesthetics.—By Henry M. Lyman, A. M., M. D., Professor in Rush Medical College, Chicago. 8vo. Pp. 338. New York: Wm. Wood & Co. Cincinnati: H. L. Stacey.

This is the issue of September of "Wood's Library of Standard Medical Authors."

In this work of over three hundred pages will be found everything of value known in regard to the various anesthetics in use. The whole subject of them is treated in minute detail. Not only is set forth what the author himself knows about them, but the work also embodies "all the excellencies of the writers who have investigated the subject of Artificial Anesthesia. The practiced expert will, therefore, recognize the quality of Perrin, of Snow, of Simpson, of Sansom, of Anstie, of Turnbull, of Keppeler and of Rottenstein." Physicians, who not only wish to inform themselves in regard to anesthetics for the every day purposes of practice, but desire to have a work for reference in any event that may transpire, as a medico-legal case, etc., will undoubtedly find this one the most complete and reliable that has yet been issued. It will greatly enhance the value of Wood's Library for the present year.

Under the head of "Anesthesia in Obstetrical Practice," the author states that in perfectly natural labor the use of anesthetics can afford no advantage—may even work an injury to the patient. But in civilized society, he says, the majority of mankind are living under quite abnormal conditions. As a consequence of this, the reproductive functions suffer disturbance in a manner that becomes more conspicuous than the minor affections of the other bodily functions. Woman, being more sensitively organized than man, exhibits these reproductive derangements in their highest degree. Hence, in civilized society, it is the rule, rather than the exception, to find parturition, attended with a high degree of suffering.

The use of anesthetics, therefore, he considers perfectly justifiable in all cases of painful obstetrical function, on precisely the same ground that the use of anodynes in painful menstruation is defensible. He regards that in all cases of normal parturition the employment of anesthetics is as undesirable as would be the practice of using opiates during the period of normal menstruation.

Some physicians refuse to give anesthetics during the first stage of labor. But our author considers them as safe and as needful in that stage as in the second, when the sufferings are great. Every case, he says, should be estimated by itself, and pain should be alleviated without regard to the time of its occurrence. The unfavorable results which have been ascribed to anesthesia during an early period of labor have been due to an excessive use of the anesthetic rather than to its use at all.

He considers chloroform as the obstetrical anesthetic *par excellence*. Its convenience, the agreeable effects of its inhalation, and the very trifling degree of changes which accompanies its use, all unite in maintaining for this elegant preparation the first place among anesthetic agents preferred by the obstetrician. This, however, should be true only of its use as an anodyne. When complete anesthesia is required for the graver operations of midwifery, sulphuric ether should be preferred to all other agents.

THE PHYSICIAN'S VISITING LIST OF LINDSAY & BLAKISTON FOR 1882. Thirty-first year of publication.

This well-known Visiting List for the coming year is now out; and those practitioners who wish to insure the

possession of one should secure it immediately, for if they wait until the time to use it, they may be disappointed. While the plan, which is so much approved, remains the same, there is added to this edition, but which occupies very little space, Marshall Hall's Ready Method in Asphyxia, Poisons and their Antidotes, Metric System of Weights and Measures, Posological Table—giving doses of medicines in both the usual apothecaries' weights and measures, and in metric terms.

This Visiting List is too well known to require either description or commendation from us.

EDITORIAL.

PARTIES who advertise will consult their interests by advertising in a well-established journal—not one just commenced, nor one that has lived out its day of usefulness and is kept alive by occasionally buying up the subscription list of a defunct contemporary. It is better to pay a reasonable sum for space in a journal of large *bona fide* circulation than a very small sum in a journal of scarcely any circulation.

THE MEDICAL NEWS is the cheapest medical journal to advertise in of any medical journal in the West—not because it charges less per page, but because it has the largest circulation. Those who advertise in it usually continue their advertisements so long as they continue to advertise in any journal. In looking over the advertising form it will be observed that not a few of the advertisements have been appearing for years.

We hereby append the post-office law in regard to periodical publications. By noticing it, and keeping it in mind, hard feelings would sometimes be avoided:

UNITED STATES POSTAL LAW.—1. A postmaster is required to give notice *by letter* (returning a paper does not answer the law) when a subscriber does not take his paper out of the office, and state the reasons for its not being taken. Any neglect to do so makes the postmaster *responsible* to the publishers for payment.

2. Any person who takes a paper from the post-office, whether directed to his name or another, or whether he has subscribed or not, is responsible for the pay.

3. If a person orders his paper discontinued, he must pay all arrearages, or the publisher may continue to send it until the payment is made, and collect the whole amount, *whether it be taken from the office or not.* There can be no legal discontinuance until the payment is made.

4. If the subscriber orders his paper to be stopped at a certain time, and the publisher continues to send, the subscriber is bound to pay for it *if he takes it out of the post-office.* The law proceeds upon the fact that a man must pay for what he uses.

5. The courts have decided that refusing to take a newspaper and periodicals from the post-office, or removing and leaving them uncalled for, is *prima facie* evidence of intentional fraud.

PROFESSIONAL RELATIONS BETWEEN PHYSICIANS AND DRUGGISTS.—The relations between physicians and druggists have recently formed a subject of discussion in the *Philadelphia Medico-Legal Society*, and other medical societies of Philadelphia. It is a most important one, and we often feel surprised that the profession seem to take so little

interest in it. It is the commonest thing for druggists in Cincinnati to prescribe. We presume there is not a single retail druggist in this city that does not do more or less of it every day; and, in fact, some of them treat as many patients in their stores as the generality of physicians do in their offices. And as for the refilling of a prescription without the order of the physician who wrote it, we believe there are not more than one or two, so far as we have personal knowledge, who would not be surprised if his right to do so was disputed; and yet a little reflection should convince any one that such a claim is a gratuitous assumption, the validity of which ought not to be recognized for a moment. This prerogative, if we may so term it, of dispensing a doctor's prescription broadcast, after it has left his hands, having been prescribed to meet special indications in a particular person, should meet with deserved reprobation. It is dangerous—eminently so—for it might lead to the death of some one, or inflict injury to health. Besides, it is unjust to the physician. A few days ago we learned that some half dozen families, the most of them strangers to us, had been having a prescription of ours, written a long time ago for some one individual for a special object, refilled time and again for a number of years. Such procedures existing must tend to be highly injurious to the community, and, on that account alone, should be stopped; but it is besides a swindle upon physicians. A physician has acquired his knowledge of medicines, and how to combine and use them for the cure of diseases, at great expenditure of both money and time, and no one has a right to make use of his knowledge for the relief of any ailment without compensating him. In such instances a druggist is fully paid for the price of the medicines and compounding them, and often nets many dollars, but the physician does not realize a cent.

We are happy to be able to state that our Philadelphia brethren have taken action looking to breaking up the abuse. By means of a circular sent to them individually, the special attention of all regular physicians and pharmacists of that city has been invited to a set of resolutions offered by representative pharmacists of Philadelphia, at recent meetings of conference between a committee of the "Medico-Legal Society of Philadelphia" and regular pharmacists, at the College of Pharmacy, and adopted for mutual observance and adherence, that "through the

practical operation of said resolutions the legitimate office of Pharmacy and the professional Province of Physicians shall not only be powerfully promoted, but the physical and moral welfare of the community at large be better guarded and protected."

1. "*Resolved*, That the subject of controlling the Patent Medicine evil be referred to the Philadelphia Medico-Legal Society, and that they be requested to send a committee to Druggists, requesting them to place out of sight Patent Medicine Signs and Medicine, and discourage the sale of Nostrums; said druggists to sign their names to such an agreement, and physicians promising, on their part, to throw all the weight of their patronage to such pharmacists as comply with the request."

2. "*Resolved*, That physicians, when writing a Prescription which they do not wish renewed, should write on the bottom of such Prescription, '*Do Not Renew*,' and also inform the patient of the fact, in every case."

3. "*Resolved*, That as the diagnosis and treatment of diseases belong to the province of a distinct profession, and as a pharmaceutical education does not qualify the pharmacist for these responsible offices, he should, where it is practicable, refer applicants for medical aid to a Regular Physician."

The *Philadelphia County Medical Society* has also taken action in regard to the refilling of prescriptions by druggists without the order of the physician making the prescription, and other abuses which have been called to their attention. From a circular we clip the following:

The Committee on Hygiene and the Relations of the Profession to the Public, respectfully report as follows:

Dr. Geo. B. H. Swayze read before the society a paper, in which were discussed the injuries done to physicians by certain druggists to whom had been entrusted the dispensing of prescriptions of medical men. The statements brought forward led to presentations before the society of several resolutions designed to remedy the evils complained of. None of these were passed, but they were, with the whole subject, referred to the Committee on Hygiene and the Relations of the Profession to the Public.

Accordingly the committee met for deliberation. They had before them a report of the recent meetings of the Medico-Legal Society of this city, in which the same subjects were discussed, and also the comments of a pharmaceutical society, *Chicago Pharmacist*, and *American Journal of Pharmacy*. From these sources, and from the paper of Dr. Swayze, and the personal evidence before the committee, it appeared that there were special grievances laid at the door of pharmacists.

1. That the prescriptions sent to the shop of the druggists were renewed indefinitely, though the intention of the physician was that they should be filled but once.

2. That the druggists invaded the domain of the physician by themselves prescribing for the sick instead of awaiting the prescription of the physician.

3. That druggists were active agents disseminating proprietary medicines and nostrums.

In view, therefore, of the grievances mentioned, the committee reported the following resolutions for adoption by the society:

Resolved, That in the opinion of the Philadelphia County Medical Society, a druggist acts simply as an agent of a physician in compounding his pre-

scription, and that it is a breach of his proper obligation to the physician to renew without his directions, or furnish copies of any formulæ prescribed.

Resolved, That the members of this society will note which druggists commit such breaches of obligation, and dissuade their patients from taking prescriptions to them to be compounded.

Resolved, That the members of this society will endeavor to have their prescriptions compounded by apothecaries who do not exhibit signs or circulars, or otherwise encourage the use by the public of Patent or Proprietary Medicines.

The *College of Pharmacy* has also taken high grounds, we are pleased to be able to say, and have passed stringent resolutions in regard to pharmacists transcending their duties by prescribing for the sick, and refilling prescriptions without the direction of the physician. They advise physicians, when they do not wish a prescription to be renewed, to designate the fact by some mark or sign on the margin, or writing the words "Not to be refilled." Among other great pharmaceutical houses of the country who have signed an agreement to confine themselves to doing an exclusively legitimate business is the well known house of Parke, Davis & Co., of Detroit. They pledge themselves not to manufacture any proprietary or secret preparations, or give any encouragement to the manufacture or sale of them by others. This action on their part is in harmony with the high character they have always sustained.

We copy the following from an editorial in the *Medical Annals*, published at Albany, N. Y. The editor had under consideration "Legitimate Pharmacy Allied to Medicine."

"As we intimated above, all of our manufacturing pharmacists are not committed to these abuses. There are two honorable exceptions, and it behooves the medical profession to boldly extend the hand of fellowship and their patronage to those pharmaceutical houses who will affix their signature to a platform which any physician with due regard to his code of ethics, can conscientiously sustain. That there are pharmaceutical houses who have already taken this stand is a fact, and we have no doubt that others will follow in their wake when their attention is plainly called to the importance of doing so. We point with particular satisfaction to the names and records of Dr. E. R. Squibb, Brooklyn, and Messrs. Parke, Davis & Co., of Detroit. Concerning the former gentleman, it is unnecessary to make any remarks, as his name and record are too familiar with the medical profession to require our commendation. With regard to Parke, Davis & Co., however, in view of the fact that, as a Western house, their name has only been known to the Eastern profession within the past two years, we feel it our duty, as well as pleasure, to here make a profession of our entire confidence in the integrity of their methods. We have ourselves carefully watched their movements in the vicinity of Albany, have read with interest the printed platform upon which they work, and to which they affix their signature, and we sincerely hope that we may be able, ere long, to add the names of others in the manufacturing line who will assume a similar stand.

"Referring particularly to the policy of Parke, Davis & Co., in the intro-

duction of new remedies, we think that here again they merit the entire sympathy and assistance of the profession; investing large amounts in the collection and importation of those drugs which have earned a satisfactory reputation abroad, they place them upon the American market, subject wholly to the critical tests and observations of the medical profession, based upon samples which are freely and gratuitously distributed. If the drug is a failure, surely no one is the loser but the enterprising firm who have invested their capital upon the basis of the statements of physicians abroad. If the drug proves a success, as has been definitely established in the cases of rhamnus purshiana, eucalyptus globulus, coto bark, guarana, coca, yerba santa, and many others introduced by this firm, surely the profession and humanity are the gainers."

HOMŒOPATHY.—The editor of the *Med. Times*, of October 8, says: "That there can be no doubt that homœopathic belief is dying out. Even homœopathic believers," he continues, "are growing proportionately fewer in the world; but that real homœopathic faith dies faster than do its nominal believers." A number of homœopathic physicians of Cincinnati have admitted to us that they place but little reliance upon homœopathic principles in the treatment of disease.

The editor of the *Times* thus illustrates homœopathic principles: "Mustard may cause vomiting, when the vomiting already exists—it sometimes cures it, sometimes makes it worse. Every old woman knows that a tumbler of warm water will sometimes provoke the sick stomach into further action, sometimes settle it. When vomiting is from irritation, a sedative allays it; when from excessive depression the sedative makes it worse, while the irritant causes it to cease.

"The doctrines of the psora and of the infinitesimals are so obsolete as not to be worth discussing. The dogma of the similars is the homœopathic treasure of to-day. Either it is a law of nature, or it is not a law. If it be a law it can have no exceptions. Now, when a homœopathic physician ceases to trust this law absolutely in his practice, he ceases to worship Hahnemann—his god is no more god."

The *Times* states it correctly when it says that regular and homœpath can not "meet" so long as the latter holds on to his dogmas. They can "meet" only when with the regular, he takes the ground that there are no therapeutic dogmas; when he has determined to get out of science in general, for the cure of diseases, all that can be had; when he recognizes that medicine, as a science,

is very imperfect, and consequently is largely empirical; and, therefore, is willing to eagerly seize upon, in the battle for life, anything that may promise assistance, whether it come from Choctaw or Hottentot, from old woman or young maiden, from homœopath, or allopath, or eclectic, from king or peasant, from savant or quack, from white, indian, or negro.

In scientific medicine, or in that which has already been garnered up as true as regards disease and its remedies, however it may have been discovered, there is no pathy or ism, no more than there is in mathematics, astronomy, geology, or entomology. A truth is a truth, and any change or modification of it is a departure from it into that which is false. There can not be allopathic truths and homœopathic truths. Whatever is observed to be a fact in the use of any remedy, in a disease, is a general one, and belongs to every one alike, whether he discovered it or some other person; and all the facts which are thus known, from all sources, constitute the so-called science of medicine of to-day. And as these facts are being added to every day, medicine is consequently progressive.

There is no fact in homœopathy that does not belong as much to the "regular" physician as to the homœopathic.

R. & J. Beck's Microscopes.—As we promised in our last issue we will resume the consideration of the microscopes of this house. Besides the "Economic" and "International," which we have already described, there are the "New National" and the "Ideal."

The "New National" is made either binocular or monocular. It has a mechanical stage, which many prefer, in consequence of being able with it to examine with certainty, escaping nothing, every portion of an object, or whatever may be under the glass cover of slide. It can be inclined to any degree from vertical to horizontal—the whole instrument being steady and free from tremor.

The stage is of glass, with complete rotation in the optic axis, upon the top of which is a sliding object-holder, very thin. Beneath the stage is a tube carrying all the substage apparatus, as the achromatic condenser, Wenham's parabola, polarizing apparatus.

This is certainly as beautiful an instrument as we have

ever seen. It is finely finished and is capable of all work. With such an instrument one's wants in the microscopic line, having, of course, suitable objectives, would be well supplied. The adjustments are all that can be desired—the fine adjustment consisting of a delicate micrometer screw and lever attachment, working with absolute freedom from all motion, and by which the very highest powers may be focussed with the greatest exactness. The coarse is by rack and pinion, with large milled heads, working with great smoothness and regularity.

The price of this instrument, monocular, with one eye-piece and without objectives, . . . $50
Binocular, with one pair of eye-pieces and without objectives, ... 75
Monocular, with two eye-pieces, 1 inch and $\frac{1}{6}$ inch objectives, magnifying from 47 to over 600 diameters, 85
Binocular, fitted the same way, ... 110

We can recommend this instrument as an exceedingly beautiful and efficient instrument.

Record of the Post-mortem Examination of the Body of President J. A. Garfield, made September 20, 1881, *commencing at* 4:30 *P.M., eighteen hours after death, at Francklyn Cottage, Elberon, New Jersey.*

In the last issue of the MEDICAL NEWS was printed the account of the *post-mortem* of PRESIDENT GARFIELD, which the surgeons in attendance published immediately after it was made. Since then another and fuller one has been written and published.

All of the viscera that were in any way involved in the wound were retained by the surgeons for subsequent examination, when they could be studied at leisure. The vertebræ were divided by the saw, so as to better exhibit the course of the ball. The ball, it will be recollected, passed through the upper portion of the first lumbar vertebra, injuring, to some extent, the last dorsal. These vertebræ, we understand, have been mounted for preservation. So also portions of the viscera.

Although, probably, a majority of our readers have read, in the newspapers, this last and completed description of the *post-mortem*, we yet publish it in the NEWS,

in order that it may be conveniently preserved for reference.

"Present and assisting: Dr. D. W. Bliss; Surgeon-General J. K. Barnes, U. S. Army; Surgeon J. J. Woodward, U. S. Army; Dr. Robert Reyburn, Dr. Frank H. Hamilton, Dr. D. Hayes Agnew, Dr. Andrew H. Smith, of Elberon (and New York), and Acting Assistant Surgeon D. S. Lamb, of the Army Medical Museum, Washington, D. C.

"Before commencing the examination, a consultation was held by these physicians, in a room adjoining that in which the body lay, and it was unanimously agreed that the dissection should be made by Dr. Lamb, and that Surgeon Woodward should record the observations made. It was further unanimously agreed that the cranium should not be opened. Surgeon Woodward then proposed that the examination should be conducted as follows:

"That the body should be viewed externally, and any morbid appearances existing recorded; that a catheter should then be passed into the wound, as was done during life, to wash it out, for the purpose of assisting to find the position of the bullet; that a long incision should next be made from the superior extremity of the sternum to the pubes, and this crossed by a tranverse one just below the umbilicus; that the abdominal flaps thus made should then be turned back, and the abdominal viscera examined; that after the abdominal cavity was opened the position of the bullet should be ascertained, if possible, before making any further incision; and that, finally, the thoracic viscera should be examined.

"This order of procedure was unanimously agreed to.

"The examination was then proceeded with, and the following *external appearances* were observed:

"The body was considerably emaciated, but the face was much less wasted than the limbs. A preservative fluid had been injected by the embalmer, a few hours before, into the left femoral artery. The pipes used for the purpose were still in position. The anterior surface of the body presented no abnormal appearances, and there was no ecchymosis or other discoloration of any part of the front of the abdomen.

"Just below the right ear, and a little behind it, there was an ova-ulcerated opening, about half an inch in long diameter, from which some sanious pus was escaping, but no tumefaction could be observed in the parotid region.

"A considerable number of purpura-like spots were scattered thickly over the left scapula, and thence forward as far as the axilla. They ranged from one-eighth to one-fourth of inch in diameter, were slightly elevated and furfuraceous on the surface, and many of them were confluent in groups of two to four or more. A similar, but much less abundant, eruption was observed sparsely scattered over the corresponding region on the right side.

"An oval excavated ulcer about an inch long, the result of a small carbuncle, was seated over the spinous process of the tenth dorsal vertebra. Over the sacrum there were four small bed-sores, the largest about half an inch in diameter. A few acne pustules, and a number of irregular spots of post-mortem hypostatic congestion were scattered over the shoulders, back, and buttocks. The inferior part of the scrotum was much discolored by by hypostatic congestion. A group of hemorrhoidal tumors, rather larger than a walnut, protruded from the anus.

"The depressed cicatrix of the wound made by the pistol-bullet was recognized over the tenth intercostal space, three and one-half inches to the right of the vertebral spines. A deep linear incision (made in part by the operation of July 24th, and extended by that of August 8th) occupied a position closely corresponding to the upper border of the right twelfth rib. It commenced posteriorly about two inches from the vertebral spines, and extended forward a little more than three inches. At the anterior extremity of this incision there was a deep, nearly square abraded surface about an inch across.

"A well-oiled flexible catheter, fourteen inches long, was then passed into this wound, as had been done to wash it out during life. More resistance was at first encountered than had usually been the case, but after several trials the catheter entered, without any violence, to its full length. It was then left in position, and the body disposed supinely for the examination of the viscera.

"The *cranium* was not opened.

"A long incision was made from the superior extremity of the sternum to the pubis, followed by a transverse incision crossing the abdomen just below the umbilicus. The four flaps thus formed were turned back and the abdominal viscera exposed. The subcutaneous adipose tissue divided by the incision was little more than one-

eighth of an inch thick over the thorax, but was thicker over the abdomen, being about one-fourth of an inch thick along the linea alba, and as much as one-half inch thick toward the outer extremity of the transverse incision.

"On *inspection of the abdominal viscera in situ,* the transverse colon was observed to lie a little above the the line of the umbilicus. It was firmly adherent to the anterior edge of the liver. The greater omentum covered the intestines pretty thoroughly from the transverse colon almost to the pubes. It was still quite fat, and was very much blackened by venous congestion. On both sides its lateral margins were adherent to the abdominal parietes opposite the eleventh and twelfth ribs. On the left side the adhesions were numerous, firm, well organized, and probably old.* On the right side there were a few similar adhesions, and a number of more delicate and probably recent ones.

"A mass of black, coagulated blood covered and concealed the spleen and the left margin of the greater omentum. On raising the omentum it was found that this blood-mass extended through the left lumbar and iliac regions and dipped down into the pelvis, in which there was some clotted blood and rather more than a pint of bloody fluid.† The blood-coagula having been turned out and collected, measured very nearly a pint. It was now evident that secondary hemorrhage had been the immediate cause of death, but the point from which the blood had escaped was not at once apparent.

"The omentum was not adherent to the intestines, which were moderately distended with gas. No intestinal adhesions were found other than those between the transverse colon and the liver, already mentioned.

"The abdominal cavity being now washed out as thoroughly as possible, a fruitless attempt was made to obtain some indication of the position of the bullet before making any further incision. By pushing the intestines aside, the extremity of the catheter, which had been passed into the wound, could be felt between the peri-

* These adhesions, and the firm ones on the right side, as well as those of the spleen, possibly date back to an attack of chronic dysentery, from which the patient is said to have suffered during the civil war.

† A large part of this fluid had probably transuded from the injecting material of the embalmer.

toneum and the right iliac fascia; but it had evidently doubled upon itself, and, although a prolonged search was made, nothing could be seen or felt to indicate the presence of the bullet, either in that region or elsewhere.

"The abdominal viscera were then carefully removed from the body, placed in suitable vessels, and examined *seriatim*, with the following results:

"The adhesions between the liver and the transverse colon proved to bound an *abscess-cavity* between the under-surface of the liver, the transverse colon, and the transverse mesocolon, which involved the gall bladder, and extended to about the same distance on each side of it, measuring six inches transversely and four inches from before backward. This cavity was lined by a thick pyogenic membrane, which completely replaced the capsule of that part of the under-surface of the liver occupied by the abscess. It contained about two ounces of greenish yellow fluid—a mixture of pus and biliary matter. This abscess did not involve any portion of the substance of the liver except the surface with which it was in contact, and no communication could be detected between it and any part of the wound.

"Some recent peritoneal adhesions existed between the upper surface of the right lobe of the liver and the diaphragm. The *liver* was larger than normal, weighing eighty-four ounces; its substance was firm, but of a pale-yellowish color on its surface and throughout the interior of the organ, from fatty degeneration. No evidence that it had been penetrated by the bullet could be found, nor were there any abscesses or infarctions in any part of its tissue.

"The *spleen* was connected to the diaphragm by firm, probably old, peritoneal adhesions. There were several rather deep congenital fissures in its margins, giving it a lobulated appearance. It was abnormally large, weighing eighteen ounces; of a very dark lake-red color, both on the surface and on section. Its parenchyma was soft and flabby, but contained no abscesses or infarctions.

"There were some recent peritoneal adhesions between the posterior wall of the *stomach* and the posterior abdominal parietes. With this exception no abnormities were discovered in the stomach or *intestines*, nor were any other evidences of general or local peritonitis found besides those already specified.

"The *right kidney* weighed six ounces, the *left kidney* seven. Just beneath the capsule of the left kidney, at about the middle of its convex border, there was a little abscess one-third of an inch in diameter, and there were three small serous cysts on the convex border of the right kidney, just beneath the capsule; in other respects the tissue of both kidneys was normal in appearance and texture.

"The *urinary bladder* was empty.

"Behind the right kidney, after the removal of that organ from the body, the dilated *track of the bullet* was dissected into. It was found that from the point at which it had fractured the right eleventh rib (three and one-half inches to the right of the vertebral spines) the missile had gone to the left, obliquely forward, passing through the body of the first lumbar vertebra and lodging in the adipose connective tissue immediately below the lower border of the pancreas, about two and one-half inches to to the left of the spinal column, and behind the peritoneum. It had become completely encysted.

"The track of the bullet between the point at which it had fractured the eleventh rib and that at which it entered the first lumbar vertebra was considerably dilated, and the pus had burrowed downward through the adipose tissue behind the right kidney, and thence had found its way between the peritoneum and the right iliac fascia, making a descending channel which extended almost to the groin. The adipose tissue behind the kidney in the vicinity of this descending channel was much thickened and condensed by inflammation. In the channel, which was found almost free from pus, lay the flexible catheter introduced into the wound at the commencement of the autopsy; its extremity was found doubled upon itself, immediately beneath the peritoneum, reposing upon the iliac fascia, where the channel was dilated into a pouch of considerable size. This long descending channel, now clearly seen to have been caused by the burrowing of the pus from the wound, was supposed during life to have been the track of the bullet.

"The last dorsal, together with the first and second lumbar vertebra and the twelfth rib, were then removed from the body for more thorough examination.

"When this examination was made, it was found that the bullet had penetrated the first lumbar vertebra in the

upper part of the right side of its body. The aperture by which it entered involved the intervertebral cartilage next above, and was situated just below and anterior to the intervertebral foramen, from which its upper margin was about one-fourth of an inch distant. Passing obliquely to the left, and forward to the upper part of the body of the first lumbar vertebra, the bullet emerged by an aperture, the center of which was about one-half inch to the left of the median line, and which also involved the intervertebral cartilage next above. The cancellated tissue of the body of the first lumbar vertebra was very much comminuted and the fragments somewhat displaced. Several deep fissures extended from the track of the bullet into the lower part of the body of the twelfth dorsal vertebra. Others extended through the first lumbar vertebra into the intervertebral cartilage between it and the second lumbar vertebra. Both this cartilage and that next above were partly destroyed by ulceration. A number of minute fragments from the fractured lumbar vertebra had been driven into the adjacent soft parts.

"It was further found that the right twelfth rib also was fractured at a point one and one-fourth inch to the right of the transverse process of the twelfth dorsal vertebra; this injury had not been recognized during life.

"On sawing through the vertebra, a little to the right of the median line, it was found that the spinal canal was not involved by the track of the ball. The spinal cord, and other contents of this portion of the spinal canal, presented no abnormal appearances. The rest of the spinal cord was not examined.

"Beyond the first lumbar vertebra, the bullet continued to go to the left, passing behind the pancreas to the point where it was found. Here it was enveloped in a firm cyst of connective tissue, which contained, besides the ball, a minute quantity of inspissated, somewhat cheesy pus, which formed a thin layer over a portion of the surface of the lead. There was also a black shred adherent to a part of the cyst-wall, which proved, on microscopical examination, to be the remains of a blood-clot. For about an inch from this cyst the track of the ball behind the pancreas was completely obliterated by the healing process. Thence, as far backward as the body of the first lumbar vertebra, the track was filled with coagulated blood, which extended on the left into an

irregular space rent in the adjoining adipose tissue behind the peritoneum and above the pancreas. The blood had worked its way to the left, bursting finally through the peritoneum behind the spleen into the abdominal cavity. The rending of the tissues by the extravasation of this blood was undoubtedly the cause of the paroxysms of pain which occurred a short time before death.

"This mass of coagulated blood was of irregular form, and nearly as large as a man's fist. It could be distinctly seen from in front through the peritoneum, after its sight behind the greater curvature of the stomach had been exposed by the dissection of the greater omentum from the stomach, and especially after some delicate adhesions between the stomach and the part of the peritoneum covering the blood-mass had been broken down by the fingers. From the relations of the mass as thus seen, it was believed that the hemorrhage had proceeded from one of the mesenteric arteries, but as it was clear that a minute dissection would be required to determine the particular branch involved, it was agreed that the infiltrated tissues and the adjoining soft parts should be preserved for subsequent study.

"On the examination and dissection made in accordance with this agreement, it was found that the fatal hemorrhage proceeded from a rent, nearly four-tenths of an inch long, in the main trunk of the splenic artery, two and one-half inches to the left of the cœliac axis. This rent must have occurred at least several days before death, since the everted edges in the slit in the vessel were united by firm adhesions to the surrounding connecting tissue, thus forming an almost continuous wall bounding the adjoining portion of the blood-clot. Moreover, the peripheral portion of the clot in this vicinity was disposed in pretty firm concentric layers. It was further found that the cyst below the lower margin of the pancreas, in which the bullet was found, was situated three and one-half inches to the left of the cœliac axis.

"Besides the mass of coagulated blood just described, another, about the size of a walnut, was found in the greater omentum, near the splenic extremity of the stomach. The communication, if any, between this and the larger hemorrhagic mass could not be made out.

"The examination of the *thoracic viscera* resulted as follows:

"The *heart* weighed eleven ounces. All the cavities were entirely empty except the right ventricle, in which a few shreds of soft, reddish coagulated blood adhered to the internal surface. On the surface of the mitral valve there were several spots of fatty degeneration; with this exception the cardiac valves were normal. The muscular tissue of the heart was soft, and tore easily. A few spots of fatty degeneration existed in the lining membrane of the aorta just above the semilunar valves, and a slender clot of fibrin was found in the aorta, where it was divided, about two inches from these valves, for the removal of the heart.

"On the right side slight pleuritic adhesions existed between the convex surface of the lower lobe of the lung and the costal pleura, and firm adhesions between the anterior edge of the lower lobe, the pericardium, and the diaphragm. The *right lung* weighed thirty-two ounces. The posterior part of the fissure between its upper and lower lobes was congenitally incomplete. The lower lobe of the right lung was hypostatically congested, and considerable portions, especially toward its base, were the seat of broncho pneumonia. The bronchial tubes contained a considerable quantity of stringy muco-pus; their mucous surface was reddened by catarrhal bronchitis. The lung-tissue was œdematous,* but contained no abscesses or infarctions.

"On the left side the lower lobe of the lung was bound behind to the costal pleura, above to the upper lobe, and below to the diaphragm, by pretty firm pleuritic adhesions. The *left lung* weighed twenty-seven ounces. The condition of the bronchial tubes and of the lung tissue was very nearly the same as on the right side, the chief difference being that the area of the broncho pneumonia in the lower lobe was much less extensive in the left lung than in the right. In the lateral part of the lower lobe of the left lung, and about an inch from its pleural surface, there was a group of four minute areas of gray hepatization, each about one-eighth of an inch in diameter. There were no infarctions and no abscesses in any part of the lung tissue.

"The surgeons assisting at the autopsy were unanimously of the opinion that, on reviewing the history of the case in connection with the autopsy, it is quite evident that

*A part, at least, of this condition was doubtless due to the extravasation of the injecting fluid used by the embalmer.

the different suppurating surfaces, and especially the fractured spongy tissue of the vertebra, furnish a sufficient explanation of the septic conditions which existed during life.

"About an hour after the post-mortem examination was completed, the physicians named at the commencement of this report assembled for further consultation in an adjoining cottage; a brief outline of the results of the post-mortem examinations was drawn up, signed by all the physicians, and handed up to Secretary J. Stanley Brown, who was requested to furnish copies to the newspapers. D. W. Bliss. J. J. Woodward. D. S. Lamb. J. R. Barnes. Robert Reyburn."

Action of Coffee and Sugar on the Stomach.—In a paper presented to the Societe de Biologie (*Rev. Med.*), M. Leven states that coffee, so far, as is often supposed, from accelerating the digestive process of the stomach, rather tends to impede this. When thirty grammes of coffee, diluted in one hundred and fifty of water, is given to a dog, which is killed five hours and a half afterward, the stomach is found pale, its mucous surface being anæmic, and the vessels of its external membrane contracted. The whole organ exhibits a marked appearance of anæmia. Coffee thus determining anæmia of the mucous membrane, preventing rather than favoring vascular congestion, and opposing rather than facilitating the secretion of gastric juice, how comes it that the sense of comfort is procured for so many people who are accustomed to take coffee after a meal? A repast, in fact, produces, in those whose digestion is torpid, a heaviness of the intellectual faculties, and embarrassment of the power of thinking; and these effects, and the disturbance of the head, are promptly dissipated by the stimulant effect which the coffee produces on the nervous centers, as shown by experiments with casein. Coffee and tea, when taken in excess, are a frequent cause of dyspepsia, for the anæmic condition of the mucous membrane being periodically renewed, a permanent state of congestion is at last produced, which constitutes dyspepsia. Sugar, which with many doctors has a bad reputation, is an excellent aliment, which assists digestion, and should not be proscribed in dyspepsia. By experiment, digestion of meat is found to take place much more completely when sugar is added. Coffee exerts both a local and general action, operating

locally, by means of its tannin, by diminishing the caliber of the vessels, but acting on the general economy by exciting the nervous centers and the muscular system. It renders digestion slower, and is only of good effect by relieving the feeling of torpor after meals. Its injurious action on digestion may be corrected by adding sugar, so as to counterbalance its effects on the mucous membrane. This adding sugar to coffee is not only a pleasant practice, but one contributing to digestion.

Leprosy in China.—Leprosy exists among the Chinese to a greater extent than is generally supposed. It is one of the most dreaded of diseases in China. There is a current belief there, that if a person afflicted with it can kill a young girl and eat her heart, the evidences of the disease will not appear in the face, and that he can thus escape being known as a leper. This notion has probably been the cause of many murders. The leper's demand for alms is seldom refused, most Chinamen dreading the victim of this loathsome affection, and fearing that, if denied assistance, he may in some way infect them with his leprosy, as, for instance, by tainting their food.

Prof. John E. Crowe, M. D., one of the most popular teachers and practitioners of medicine in Louisville, died suddenly in the office of Prof. Coomes, on the — of September, 1881. Dr. Crowe had suffered with an affection of the throat for several weeks, but had not considered it a matter of any serious moment until within a few hours of his death. The fact that he was engaged actively in practice up to the hour of his death, makes it extremely probable he died of either apoplexy, or some unrecognized cardiac lesion. We hope to be able soon to present our readers with a brief biographical sketch of him.

The North American Review, for November, has just been received. The contents are: "Presidential Inability," Lyman Trumbull, Judge Thos. M. Cooley, Benj. F. Butler and Prof. Theodore W. Dwight; "England's Hereditary Republic," by the Marquis of Blandford; "The Appointing Power," by Senator Geo. F. Hoar; "The Christian Religion—Part II.," by Rob't G. Ingersoll.

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JAMES G. STEELE, *Chemist.*

SAN FRANCISCO, CAL., July 1st, 1878.

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Gentlemen—We find it very satisfactory, and will always purchase your brand hereafter. Yours, etc.,

LAFORE & KAHN.

CONNECTICUT.

BRIDGEPORT, CONN., July 15th, 1878.

KIDDER & LAIRD:

Gentlemen—The physicians have used it in prescriptions, and think it a valuable preparation, and as good as they ever saw, and will give it the preference in their practice. I have been using Hawley's for the last five or six years. Yours, etc.,

W. & E. SHELTON.

WILLINGTON, CONN., Sept. 29th, 1877.

KIDDER & LAIRD:

Gents—Your elegant preparation of Pepsine has been received. I think it superior to any that I have ever used in my practice. Yours, etc.,

W. L. KELSEY, M. D.

ILLINOIS.

EDGEWOOD, ILL., July 11th, 1878.

KIDDER & LAIRD:

Gentlemen—I find Kidder's Saccharated Pepsine a fine article and very effective in conjunction with other treatments in cases of cholera infantum; would recommend it highly in such cases. Yours, etc.,

JOSEPH HALL, M. D.

MILLSTADT, ILL., June 25th, 1878.

KIDDER & LAIRD:

Gentlemen—I have adopted the use of Kidder's Saccharated Pepsine in preference to any other. It has proved satisfactory in every respect. Yours, etc.,

F. H. KRING.

STANTON, ILL, July 30th, 1878.

KIDDER & LAIRD:

Gentlemen—Please send me one pound of Kidder's Saccharated Pepsine. This makes two and three-quarter pounds. I have used it mostly in prescriptions, and prescribed it in my practice, and find it a reliable article. Yours, etc,

GEORGE BLEY, M. D.

STONE CREEK, ILL., June 15th, 1878.

KIDDER & LAIRD:

Gentlemen—I gave forty grains, in ten-grain doses, and it acted like a charm; shall use no other

Yours, etc, L. HOBBIE, M. D.

WELLINGTON, ILL, March 2d, 1878.

KIDDER & LAIRD:

Gentlemen—I shall be glad to avail myself of another supply when needed. I have tested it, and find it fully up to your representations.

Yours respectfully, DANIEL WESTON.

INDIANA.

GALVESTON, IND., July 8th, 1878.

KIDDER & LAIRD

Gentlemen—I have given your Kidder's Saccharated Pepsine my careful attention, and find it a splendid preparation. I can recommend it in my practice on account of its good qualities

Yours, etc., B. U. LOOP.

INDIANAPOLIS, IND., July 12th, 1878.

KIDDER & LAIRD:

Gentlemen—Have given Kidder's Saccharated Pepsine in a number of cases of dyspepsia; also given it to the physicians in this locality, who were well pleased with the superior quality of it.

Yours, etc., S. J. HILLMAN, M. D.

SULLIVAN, IND., July 11th, 1878.

KIDDER & LAIRD:

Gentlemen—I have prescribed your Saccharated Pepsine, and recommended it to several physicians, who have used it and pronounce it a first-class article.

Respectfully yours, H. MALOTT, M. D.

WATERMAN, IND., July 19th, 1878.

KIDDER & LAIRD

Gentlemen—I have ascertained from three doctors in my neighborhood that your Kidder's Saccharated Pepsine is a better article than some of the more expensive preparations. Yours, etc.,

OLIVER LA TOURETTE.

LOUISIANA.

DELHI, RICHMOND PARK, LA., March 20th, 1878.

KIDDER & LAIRD:

Gents—When in need of Pepsine will always order Kidder's in preference to all others, as I like it best.

Yours very respectfully, E. W. THOMSON.

MANSFIELD, LA., Jan. 31st, 1878.

KIDDER & LAIRD:

Gents—I know it to be an excellent remedy, and shall in future keep it always on hand, both for my practice and myself. Yours respectfully,

R. T. GIBBS, M. D.

MARYLAND.

ANNAPOLIS, June 20th, 1878.

KIDDER & LAIRD

Gentlemen—Since the reception of your sample of Kidder's Saccharated Pepsine we have used no other. We consider it a first-class preparation. We have never heard anything to the contrary. We shall continue to dispense it unless well-founded objections are made, which we do not fear. We purchase from Messrs. Thomsen & Muth. Yours, etc.,

J. F. PERKINS & BRO.

BALTIMORE, June 19th, 1878.

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Yours, etc, ISAAC R. BEAM.

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Pure Oil.....80 m. (drops).	**Soda.....1-3 grains.**
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Soluble Pancreatin, 5 grains.	**Hyocholic Acid.....1-20 "**

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The principles upon which this discovery is based have been described in a treatise on "*The Digestion and Assimilation of Fats in the Human Body*," by H. C. Bartlett, Ph. D., F. C. S., and the experiments which were made, together with cases illustrating the effect of Hydrated Oil in practice, are concisely stated in a treatise on "*Consumption and Wasting Diseases*," by G. Overend Drewry, M. D.

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☞**Copies of these valuable works will be sent free on application.**

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May be described as partially digested oil, which will nourish and produce increase in weight in those cases where oils or fats, not so treated, are difficult or impossible to digest. In CONSUMPTION and other WASTING DISEASES the most prominent symptom is *emaciation*, of which the first is the starvation of the fatty tissues of the body, including the brain and nerves. This tendency to emaciation and loss of weight is arrested by the regular use of HYDROLEINE, which may be discontinued when the usual average weight has been permanently regained.

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Many prominent physicians, aware of its genuine merits, sanction its use, and are in the habit of prescribing it in their practice; it has, therefore, become a popular medicine, and especially so in those sections of the country where it is best known.

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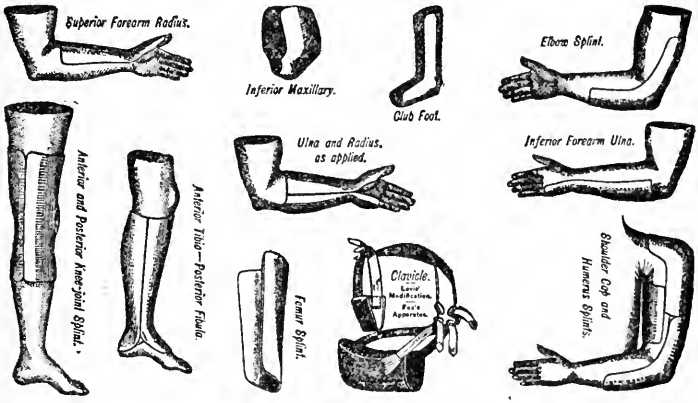

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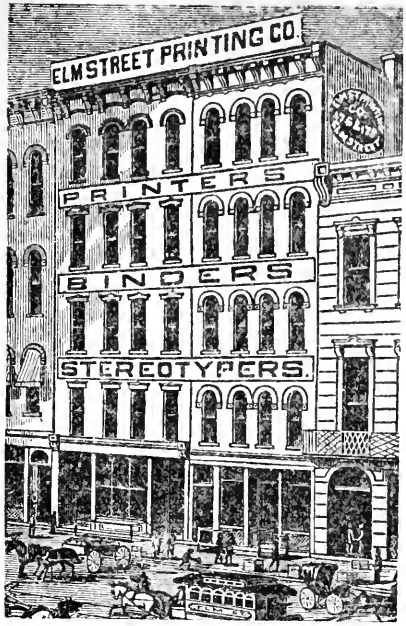

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Being supplied at the same prices as the ordinary Extracts of Malt, and *containing fully double the quantity of Diastase and nutritive elements to be found in the best of them*, it can be prescribed at less than one-half the expense.

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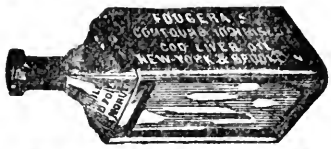
COMPOUND  IODINISED

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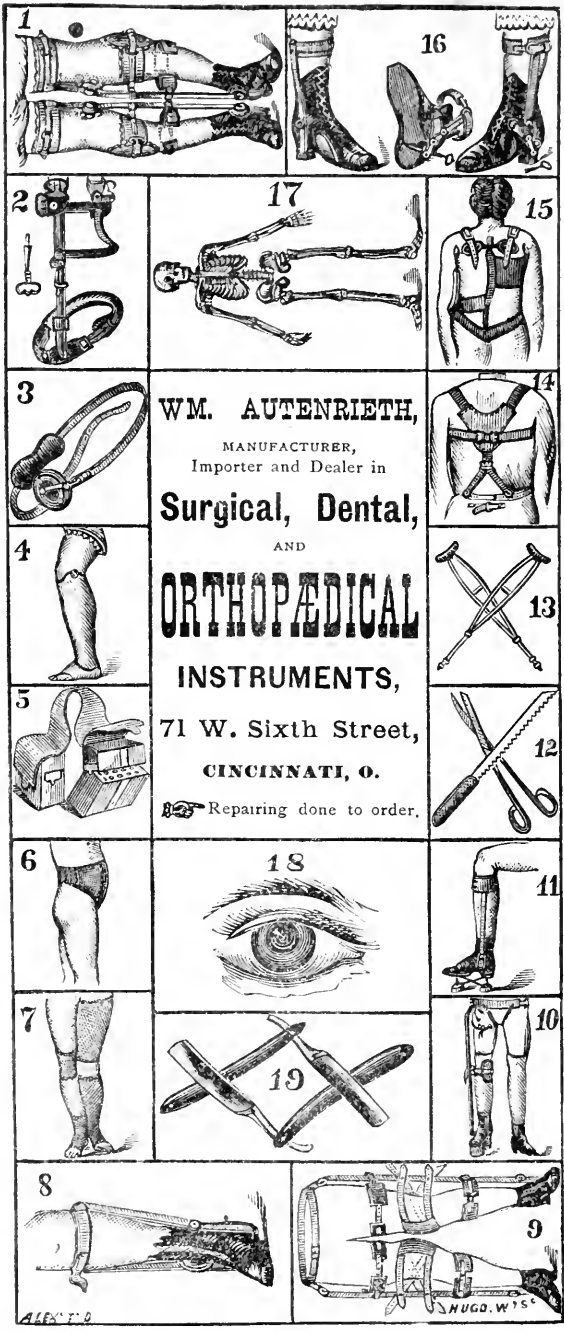

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Cod Liver Oil, 10 minims,
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